Biology Library

Bio.

March 1961 · VOL. 20 · No. 1 · PUBLISHED IN THREE PAR
PART II

Federation Proceedings

UNIVERSITY LIBRARY
MAR 17 1961
DURHAM, N. C.

45th Annual Meeting

ATLANTIC CITY, NEW JERSEY

APRIL 10–14, 1961

PROGRAM

Contents on page c

Published quarterly by the
FEDERATION OF AMERICAN SOCIETIES
for EXPERIMENTAL BIOLOGY

XUM

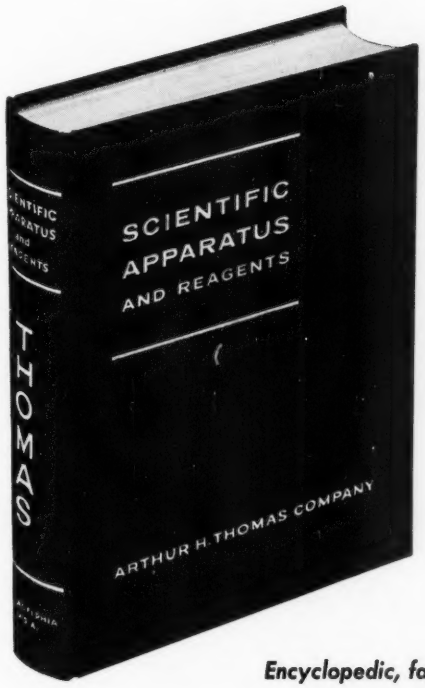
Quality

Products of The American Tobacco Company

© A. T. Co.

"Tobacco IS OUR MIDDLE NAME"

New . . . for laboratories of Chemistry and Biology



Thomas Catalog

61 ANNIVERSARY EDITION

Encyclopedic, factual, convenient

More comprehensive than former editions, with changes in format which have resulted in a lighter weight volume, more convenient to handle.

More than 20,000 items

New edition lists more than 20,000 items of Apparatus and Reagents, adequate stocks of which are regularly carried in our stock for immediate shipment. The Index is replete with cross references.

Selection of Apparatus

Selection is based on careful review and evaluation by our Technological staff. We therefore accept full responsibility for the satisfactory performance of every item listed.

Distribution of the Catalog

Copies will be sent to laboratory and purchasing personnel. Suggestions as to the catalog requirements of your laboratory or department will aid us in making adequate distribution.

QUALITY AND SERVICE
A.H.T.CO.
PHILA., U.S.A.
LABORATORY APPARATUS

ARTHUR H. THOMAS COMPANY

More and more laboratories rely on Thomas / *Laboratory Apparatus and Reagents*

VINE ST. AT 3RD • PHILADELPHIA 5, PA.

Federation Proceedings

Published by

FEDERATION *of* AMERICAN SOCIETIES *for* EXPERIMENTAL BIOLOGY

American Physiological Society
American Society of Biological Chemists
American Society for Pharmacology and Experimental Therapeutics
American Society for Experimental Pathology
American Institute of Nutrition
American Association of Immunologists

EDITORIAL BOARD

KARL H BEYER, JR.
K. M. BRINKHOUS
HORACE W. DAVENPORT
CALDERON HOWE
FRANK W. PUTNAM
ARNOLD E. SCHAEFER

MILTON O. LEE
Managing Editor

SARA F. LESLIE
Executive Editor

Subscription Price: $8.00 per year ($9.00 Canada, $10.00 foreign) payable in advance. *Single Issues: March*, Part I (Abstracts) $5.00, Part II (Program) $2.00; *July*, $2.00; *September*, $5.00; *December*, $4.00. Subscriptions and orders should be sent to: *Federation Proceedings*, 9650 Wisconsin Avenue, Washington 14, D. C.

FEDERATION PROCEEDINGS is published quarterly. The *March* issue consists of the Abstracts (Part I) of the papers presented at the scientific sessions, and the Program (Part II) of the Annual Meeting of the Federation. The *July* and *December* issues contain symposia and other special papers presented at the Federation meeting. The *September* issue contains the membership list and other matters pertinent to the Constituent Societies of the Federation.

Second-class postage paid at Washington, D. C. and at additional mailing offices. Copyright 1961, by the Federation of American Societies for Experimental Biology. Printed at Waverly Press, Baltimore, Md. All rights reserved.

Announcing
Another
RX OCKLAND
First!

NEW RX OCKLAND MOUSE WORMER-DIET*

—*with Piperazine*

Eliminates and controls infestation of certain Oxyurids in Laboratory Mice!

Developed by scientists for use under research conditions, RX OCKLAND MOUSE WORMER-DIET provides a safe, easy approach to solving the problem of infestation by certain oxyurids in colonies of laboratory mice.

Tests clearly demonstrate new RX OCKLAND MOUSE WORMER-DIET . . . *containing a Piperazine compound* . . . provides a highly effective therapy for elimination of oxyurids (*Syphacia obvelata and Aspiculuris tetraptera*). It was found that new RX OCKLAND MOUSE WORMER-DIET disrupts the life cycle of these oxyurids thus affording highly effective control *within 30 days.*

RX OCKLAND MOUSE DIET and new RX OCKLAND MOUSE WORMER-DIET are of the same formulation; with the addition of a Piperazine compound to the latter . . . the only difference. Thus you may eliminate oxyurids from your colony without interrupting their feeding program.

For further information and recommended feeding regimen, write: A. E. Staley Mfg. Co., Decatur, Illinois.

**This product available only on request.*

other RX OCKLAND standard reference stock diets:
RX OCKLAND RAT DIET (complete) • RX OCKLAND DOG DIET • RX OCKLAND MOUSE DIET • RX OCKLAND RABBIT RATION
RX OCKLAND RAT DIET (D-Free) • RX OCKLAND GUINEA PIG DIET • RX OCKLAND MONKEY DIET

RX OCKLAND™ DIETS

Manufactured and distributed by:

A. E. STALEY MANUFACTURING CO. • DECATUR, ILLINOIS

PUT THESE SIX EXPERTS TO WORK FOR YOU

THE PLURICAUSAL CARDIOPATHIES (1961 Beaumont Lecture) *by* **Hans Selye.** Surveys and analyzes the voluminous and often inaccessible polyglot publications now scattered throughout the world literature . . . *an ATLAS illustrating the diverse forms of pluricausal cardiopathies with 278 photographs and drawings* . . . a SYNOPSIS OF ORIGINAL OBSERVATIONS that does not merely discuss in general terms but actually tabulates basic data upon which the entire concept of pluricausal cardiopathies is based . . . and a LABORATORY MANUAL that describes in detail all the techniques now routinely used by the author for the production and prevention of the pluricausal cardiopathies. **Pub. March '61**

THE PHYSIOLOGY OF EMOTIONS *edited by* **Alexander Simon, Charles C. Herbert,** *and* **Ruth Straus,** *all of the Kaiser Foundation Hospitals.* With 16 acknowledged authorities participating. Until now there has been among medical men no unanimity of approach to the study of the emotions of their patients. The symposium of which this book is a report provides practical workers with a broad range of information—*expressed in physiological terms and applicable concepts*—with respect to fields that impinge on the emotions. Discussions cover centers and pathways that control the emotions, biochemical processes involved in emotional states, and sites of action of psychopharmacologic products. **Pub. March '61**

SECTION CUTTING IN MICROSCOPY *by* **H. F. Steedman.** This book is for the microtomist. Based on thirty years of practice, teaching and research in microtomy, *it provides all the information which workers in this field are likely to require*, including details of infiltration media, section cutting techniques, microtome knife sharpening, the production of broken-glass knives, adhesion of sections, and many other points of both theoretical and practical interest. **Pub. February '61, 200 pp., 95 il.**

A BIOCHEMICAL BASIS OF MULTIPLE SCLEROSIS *by* **Roy L. Swank,** *Univ. of Oregon.* Brings into perspective all factors that influence multiple sclerosis and *re-evaluates each in terms of the vascular system* which appears dominant in the pathogenesis of the disease. Attention is focused on the author's hypothesis, first suggested some years ago—that multiple sclerosis is a disease of modern times due to the influence of ecological factors resulting from modern living upon inherent genetic substratum. **Pub. Jan. '61, 100 pp., 23 il. (Amer. Lec. Living Chemistry), $5.00**

PATHOLOGY OF IONIZING RADIATION (A Carl V. Weller Lecture) *by* **Shields Warren,** *Harvard Med. School.* In concise form—the significant facts of the pathology of ionizing radiation in man and its relation to problems of the atomic age. *The differing responses to whole body radiation are brought out, as are the differences of effect of external and internal sources of radiation.* Will not only orient the pathologist with relation to radiation as it affects his field, but will guide him to more detailed information. **Pub. April '61, about 44 pp., 23 il.**

FUNCTIONAL BEHAVIOR OF THE MICROCIRCULATION *by* **Benjamin W. Zweifach,** *New York Univ.* A primer of basic knowledge to facilitate an understanding of modern principles of *blood-tissue exchange, tissue injury, and systemic disturbances such as shock and hypertension.* Throughout emphasis is placed on the close correlation between structure and function. Particular attention is given to current theories of blood-tissue exchange, with a critique of the evidence for and against endothelial participation in capillary permeability. **Pub. March '61 (Amer. Lec. Physiology)**

Send for our 1960–61 catalog of over 1250 titles.

CHARLES C THOMAS · PUBLISHER

301–327 East Lawrence Avenue

Springfield · Illinois

CARL ZEISS
WEST GERMANY

Zeiss Photo-Microscope

WITH BUILT-IN AUTOMATIC CAMERA

In using this unique instrument, you can concentrate fully on the subject being studied and photographed, *because the taking of the picture is practically automatic.*

As soon as the specimen is focused in the eyepiece you merely press a button. This results in: (1) Opening of the shutter. (2) Automatic setting of exposure time by electronic control. (3) Closing of the shutter after exposure. (4) Transporting of the film for the next picture. (5) Advance of picture counter. (6) Recocking of shutter. A spring mechanism which is wound up before inserting the film, takes care of shutter operation and the film transport. Uses a standard load of 35mm film—color or black-and-white.

Built to Zeiss standards, the Photo-Microscope has met with full approval wherever it has been put to a practical test. You can rely on it for superb performance.

Extremely Versatile

The Zeiss Photo-Microscope can be used for as many purposes as any large universal research microscope. It is suited for microscopy and photo-micrography with transmitted light and epi-illumination as well as for work with polarized light. Usual methods of examination such as bright field, dark field and phase contrast may be used.

Write for booklet

CARL ZEISS, INC.
485 FIFTH AVENUE, NEW YORK 17, N. Y.

COMPLETE SERVICE FACILITIES

Pabst Laboratories

WORLD LEADER IN COENZYME-A AND 5'-NUCLEOTIDES

ATTENTION - scientists studying the biosynthesis of DNA and deoxyribonucleotide coenzymes . . .

Deoxynucleotides of guaranteed purity are now available for immediate delivery from Pabst Laboratories.

DEOXYRIBONUCLEOSIDE-5'-MONOPHOSPHATES

$H_2dAMP \cdot H_2O$	Crystalline
$H_2dCMP \cdot H_2O$	Crystalline
$Na_2dGMP \cdot 2H_2O$	Crystalline
$NaHTMP\ (\cdot 3H_2O)$	Amorphous
$(NH_4)_2TMP \cdot 3H_2O$	Crystalline

DEOXYRIBONUCLEOSIDE-5'-TRIPHOSPHATES

$Na_2H_2dATP \cdot 3H_2O$	Crystalline
$NaH_2dCTP\ (\cdot 3H_2O)$	Amorphous
$Na_4dGTP\ (\cdot 2H_2O)$	Amorphous
$Na_2H_2TTP\ (\cdot 2H_2O)$	Amorphous

Each product has been carefully purified and characterized by ultraviolet spectroscopy, paper chromatography, electrometric titration and elemental analysis to insure conformity with Pabst high standards. Specifications and spectral curves are included in our new catalogue. "PABST RESEARCH BIOCHEMICALS – Specifications", CIRCULAR OR-17

Visit us in Booth 158

THIONICOTINAMIDE–*DPN and NICOTINAMIDE MONONUCLEOTIDE

. . . have been added to the growing list of pyridine nucleotide coenzymes, coenzyme analogs and related compounds prepared by Pabst Laboratories. Interest in these continues to grow as new uses in enzyme differentiation and special analytical techniques are discovered. The following compounds are available for immediate shipment and others will be announced in the near future:

- 3-ACETYLPYRIDINE – *DPN
- 3-PYRIDINEALDEHYDE – *DPN
- THIONICOTINAMIDE – *DPN
- DEAMINO – *DPN
- 3-ACETYLPYRIDINE-DEAMINO – *DPN
- 3-PYRIDINEALDEHYDE-DEAMINO – *DPN
- DIPHOSPHOPYRIDINE NUCLEOTIDE
- REDUCED DIPHOSPHOPYRIDINE NUCLEOTIDE
- TRIPHOSPHOPYRIDINE NUCLEOTIDE
- NICOTINAMIDE MONONUCLEOTIDE
- ADENOSINE DIPHOSPHORIBOSE

For more information about the applications and properties of these biologically important coenzymes and derivatives write for PABST CIRCULAR OR-18.

PABST LABORATORIES
Division of Pabst Brewing Company
1037 W. McKinley Avenue
MILWAUKEE 5, WISCONSIN

NATIONAL® BIOLOGICAL STAINS for FLUORESCENCE MICROSCOPY

Already showing considerable promise in expediting precise diagnoses, the use of fluorescence microscopy should grow as a wider spectrum of fluorescent biological stains becomes available and new techniques for their effective use are developed.

Recognizing the growing importance of these diagnostic aids, National can supply through nearby medical supplyhouse stocks:

#408 National ACRIDINE ORANGE

as well as these fluorescent National Biological Stains

#545 FLUORESCEIN — FREE ACID **#544 FLUORESCEIN SODIUM U.S.P.**

#661 RHODAMINE B **#702 RHODAMINE B Base** **#748 ACID RHODAMIN B**

And to assist you in specifying stains, indicators and reagents—

We will be pleased to send you a copy of our current 60-page catalog giving code numbers, packaging and prices on our comprehensive line of Laboratory Reagents; Biological Stains and Reagents; Commission Certified Biological Stains; Staining Solutions and Reagents in Solutions, as well as National Indicators and Oxidation-Reduction Indicators. This book also contains a Hydrogen-Ion Indicator Chart and other useful information.

NATIONAL ANILINE DIVISION
40 RECTOR STREET, NEW YORK 6, N. Y.
Atlanta Boston Charlotte Chicago Greensboro Los Angeles
Philadelphia Portland, Ore. Providence San Francisco
In Canada: ALLIED CHEMICAL CANADA, LTD., 100 North Queen St., Toronto 18
Distributors throughout the world. For information:
ALLIED CHEMICAL INTERNATIONAL • 40 Rector St., New York 6, N. Y.

Allied Chemical

FOR THE VERY BEST
ACRYLIC ANIMAL CAGES
SPECIFY THE ORIGINAL . . .

MOUSE® HOUSE

Keystone Cages are designed and built by the originators of the acrylic plastic "Mouse House" and other cages for experimental laboratory animals.

Discriminating users depend on the constant research and close contact with field developments that enable the "Keystone" experts to produce the most modern equipment.

Keystone Cages Will . . .

SPEED RESEARCH - clear, plastic walls permit daily cage inspection, aid observation of rodent. The false mesh bottom speeds metabolism tests and keeps the animal clean.

STAY CLEANER - lower portion of cage is free from crevices and corners. Cleaning involves only brushing the surfaces with hot soap suds and rinsing in hot water. Body acids and urine do not affect plastic cages. We recommend our HYTRON as a cleaner and safe disinfectant.

LAST LONGER - unlike the usual wood and metal cages which are useless for skilled research after the first year, our acrylic plastic cages seem to improve with age. After three years' continuous service at leading biological laboratories, the plastic "Mouse House" still shows no wear.

STAY SAFER - because the slow changing temperatures of smooth plastic protect rodents against drafts and sudden temperature changes, thus drastically reducing the mortality rate.

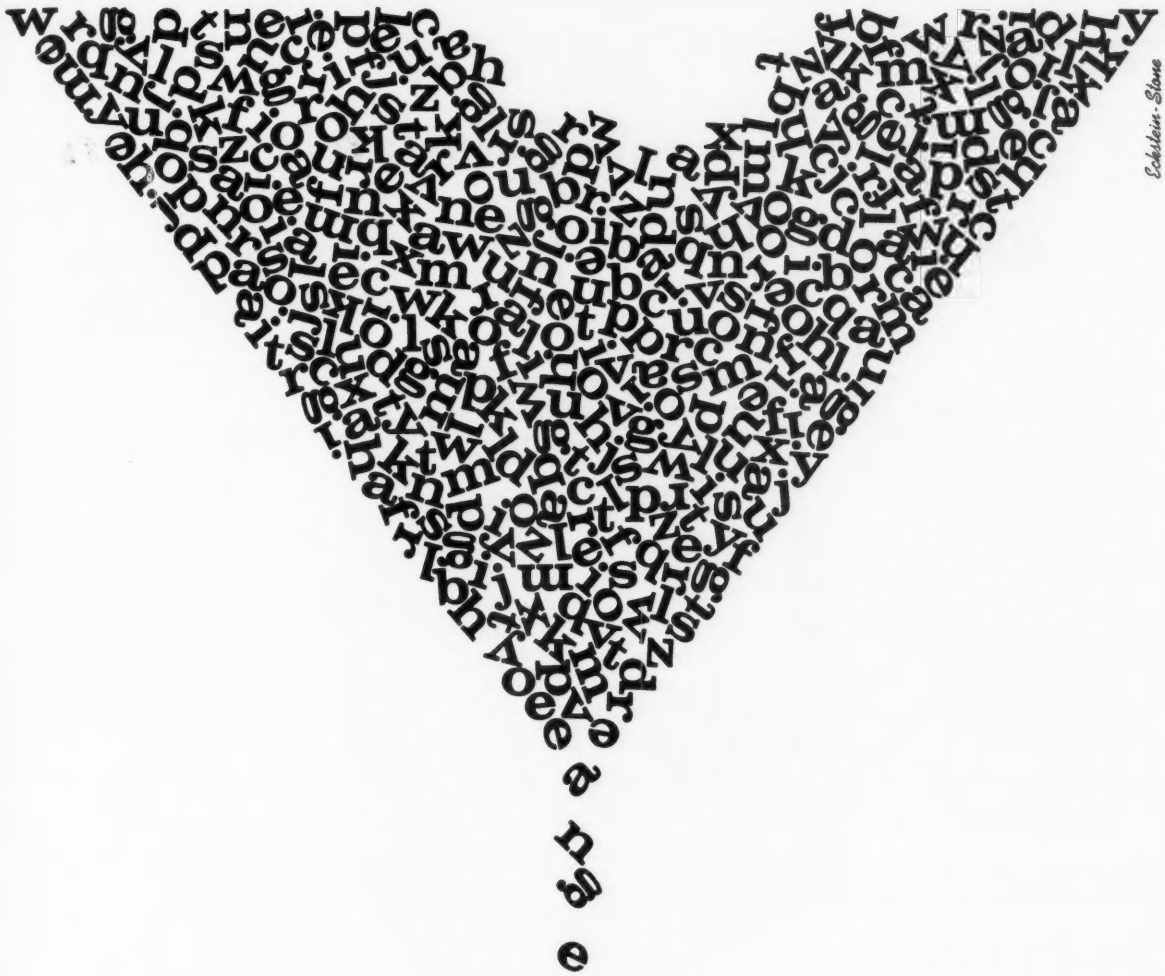
BE VERMIN PROOF - the plastic "Mouse House" automatically eliminates the outside enemies to highly technical research.

SAVE ON COSTS - by comparison with utility value of other cages. With only reasonable care in handling, these cages will last indefinitely thus making them more economical.

FOR YOUR COPY OF CATALOG F OR TECHNICAL INFORMATION ABOUT YOUR PROBLEM ADDRESS YOUR INQUIRY TO

KEYSTONE PLASTICS COMPANY

Specialists in Scientific Plastic Processing ● **701 Painter Street, Media, Pennsylvania**



Eckstein-Stone

The analyst who has never been besieged with laboratory filtration problems just doesn't exist. Nor does a filter paper exist with the magical property of being all things to all analysts. Even Reeve Angel does not yet have the panacea of filter papers. But, we do offer a vast selection in a diversified line to meet almost every need you are likely to encounter—and a skilled technical staff who can make intelligent, knowledgeable recommendation on your specific filtration problems. We invite your inquiries. Write today for a list of Reeve Angel filter products.

reeve angel
reeve angel
reeve angel

9 BRIDEWELL PLACE • CLIFTON, NEW JERSEY

new portable
electronic micro-hematocrit
instantaneous direct reading

EXHIBIT BOOTH 161

Federation of American Societies for Experimental Biology

YSI Instrumentation also on exhibit:

Thermistor based temperature measurement
Thermistor based temperature control
Fels Psychophysiological instrumentation
Blood gas analysis instrumentation
Laboratory Recorders

YELLOW SPRINGS INSTRUMENT CO., INC.

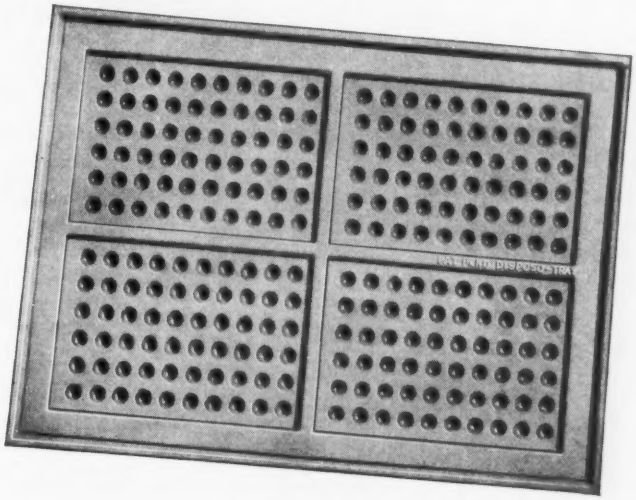
Yellow Springs, Ohio

A NEW Addition To The LINBRO DISPOSO-TRAY Line!

MICRO DISPOSO-TRAYS®

Disposable Plastic Trays For Laboratory Titrations

Can Be Used As A Single Unit of 240 Cups, Each Cup Holding Approximately 0.25 ml or Individual Units of 60 Cups.



Use in place of Test Tubes and SAVE TIME, MONEY and SPACE

MODEL 240 U-WS, White Plastic
MODEL 240 U-CS, Clear Plastic

Two Other Popular DISPOSO-TRAY Models

MODEL 96U-WS, White Plastic and MODEL 96U-CV, Clear Plastic with 96 Conical Bottom Cups Per Tray, Each Cup Holding 3 cc. Cups Numbered For Quick Identification.

MODEL 96WS, White Plastic and MODEL 96CV, Clear Plastic, with 96 Flat Bottom Cups Per Tray, Each Cup Holding 2 cc.

Get Residual-Free Clean Glassware

With 7X® LIQUID CLEANER

NON-TOXIC FOR TISSUE CULTURE

7X o-matic **Heavy Duty, Concentrated Liquid Cleaner**

For

- *Ultra-Sonic Cleaners*
- *Mechanical Washers*

7X Is Manufactured and Available In Europe Under A Licensee Agreement

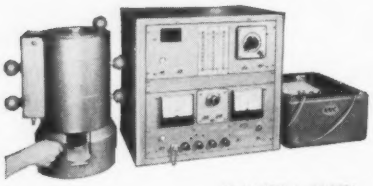
Visit Us At BOOTH No. 56

LINBRO CHEMICAL CO., Inc.

681 Dixwell Ave., New Haven, Conn., U.S.A.

NUCLEAR INSTRUMENTS

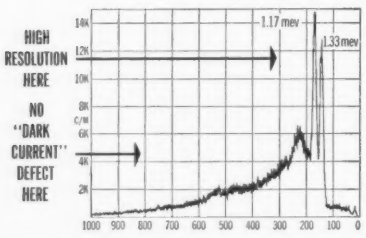
This Gamma Spectrometer Ends "Dark Current" Defect; Provides Direct Peak Comparison and Better Resolution from 1 kev to 6 mev.



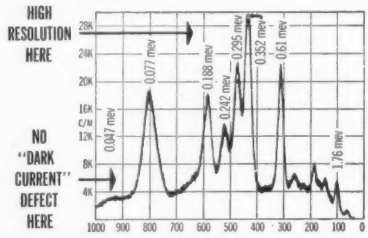
Model GSS-1—$4,180*

The NMC Model GSS-1 gamma spectrometer combines in one chassis a regulated high voltage supply as a part of the counting ratemeter autoscan system . . . all-transistorized probe amplifier and spectrometer circuits . . . and either solid or well-type crystals. It's the only system that eliminates the "dark current" defect, analyzes emitters from 1 kev to around 6 mev, and permits direct peak comparison of emitters using semi-automatic peak integration. Graph paper supplied is calibrated in mev.

Actual Spectrograms Made with a GSS-1



Actual spectrogram of Cobalt-60 made with a GSS-1 gamma spectrometer system. Window No. 3. Time constant: 2 sec.



Radium, after four runs over 20 hour period without instrument adjustment. Range 30,000 C/M. Time constant: 3 sec.

Detect and Measure α, β and γ Four Ways with This 3-Unit All-Purpose Laboratory—1 . . . or 1+2 . . . or 1+3 . . . or 1+2+3

1 PROPORTIONAL COUNTING SYSTEM
PC-3A—$1395.00*

The only instrument that counts every alpha and beta emitted in a 2 pi angle from prepared samples. Precisely separates absolute amounts of alpha and beta from any dry sample. Ideal for C-14, Ca-45, P-32 and H-3. Due to high yield, counting time may be reduced 80% to 95%. High voltage and scaling systems operate with US-1 and WSC-1 shown below.

2 UNIVERSAL SHIELD
US-1A—$395.00*

Detects gamma and beta-gamma activity in prepared flat samples. Also accepts gamma scintillation detector, mylar window GM flow detector, and strip chromatograph scanner. Operates with PC-3A.

3 WELL-TYPE COUNTER
WSC-1—$995.00*

Background less than 140 cpm. Detects low-level gamma activity in test tube and flat type samples. All-transistorized amplifier. Works with any scaler. Operates with the PC-3A.

*ALL PRICES FOB, INDIANAPOLIS

For Full Details, Write, Wire...or Phone Collect—Liberty 6-2415

Nuclear Measurements Corp.
25th and Arlington • Indianapolis 18, Indiana
International Office: 13 E. 40th Street, New York 16, N.Y.

NMC INDIANAPOLIS

SEE THEM AT THE FEDERATION EXHIBIT—BOOTH 76

Wiley BOOKS

STUDIES IN PALEOBOTANY

By Henry N. Andrews, Jr., *Washington University. With a chapter on palynology by Charles J. Felix.* An introductory text which conveys a thorough understanding of vegetation of past ages. The primary theme is the evolution of vascular plants, focussing on fossil groups having a bearing on the origin of modern plants. 1961. 487 pages. $11.75.*

ELEMENTARY HUMAN PHYSIOLOGY

By Terence A. Rogers, *Stanford University School of Medicine.* A stylistically sound presentation of physiological facts and principles unobscured by lengthy anatomical detail and often correlated with psychological and sociological considerations. 1961. Approx. 432 pages. Prob. $6.50.

INTRODUCTION TO SOIL MICROBIOLOGY

By Martin Alexander, *Cornell University.* An up-to-date and incisive text considering soil, microorganism, and biochemistry and providing explanations rather than a chronicle of facts about microorganisms and transformations occurring in the soil. 1961. Approx. 380 pages. Prob. $9.50.

INTRODUCTION TO PARASITOLOGY, Tenth Edition

By the late Asa C. Chandler; *and* Clark P. Read, *Rice Institute.* This new edition of a work that has been a classic for over *forty* years introduces pertinent new material, obsolete material having been carefully edited out. 1961. 822 pages. $9.75.

SENSORY COMMUNICATION

Edited by Walter A. Rosenblith, *M.I.T.* Presents papers from a symposium sponsored by the Center for Communications Research. A valuable source for information important to a general understanding of sensory mechanisms from the point of view of receptors, brain mechanisms, or behavior of the whole organisms. *An M.I.T. Press Book.* Approx. 1961. 848 pages. Prob. $16.00.

BIOCHEMICAL PREPARATIONS, Volume VIII

Edited by Alton Meister, *Tufts University School of Medicine.* The eighth volume of a famous series designed to provide reliable procedures for the preparation of substances of biochemical interest and to outline useful techniques and methods. This new volume features 33 carefully checked preparations. 1961. Approx. 150 pages. Prob. $6.50.

HETEROCYCLIC COMPOUNDS, Volume VII

Polycyclic Compounds Containing Two Hetero Atoms in Different Rings; Compounds with Three Hetero Atoms. *Edited by* Robert C. Elderfield, *University of Michigan. With 8 contributors.* The latest volume in a valuable series. Critical evaluation of existing information with the focus on the most recent work. 1961. Approx. 896 pages. Prob. $37.50.

CELL HEREDITY

By Ruth Sager *and* Francis J. Ryan, *Columbia University.* A new and logical treatment of the mechanisms of heredity as analyzed at the cellular level. Much of the subject matter in this superior text deals with recent findings in molecular genetics. 1961. Approx. 440 pages. Prob. $7.50.

THE FIRE OF LIFE: An Introduction to Animal Energetics

By Max Kleiber, *University of California, Davis.* A clear and precisely stated exposition of bioenergetics for the beginning student. Demonstrates the evolution of basic concepts (heat, chemical energy, etc.) and how hypotheses and theories can be developed by applying mathematics to observed data. 1961. Approx. 400 pages. Prob. $10.00.*

RADIOACTIVE WASTES: THEIR TREATMENT AND DISPOSAL

Edited by J. C. Collins, *University of Manchester, England.* Covers in detail the implications of radioactivity for water supply and waste water disposal as well as the problems of disposing of radioactive solid wastes and gases. 1961. In Press.

MICROBIAL CELL WALLS

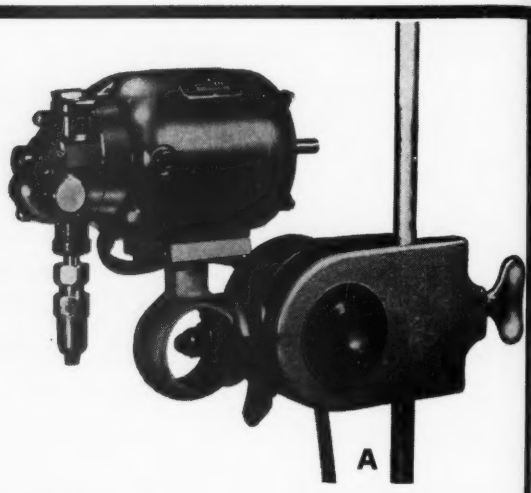
By Milton R. J. Salton, *University of Manchester, England.* The newest CIBA Lecture in Microbial Biochemistry. 1961. Approx. 112 pages. Prob. $3.50.

** Textbook edition available for college adoption.* *Send for examination copies.*

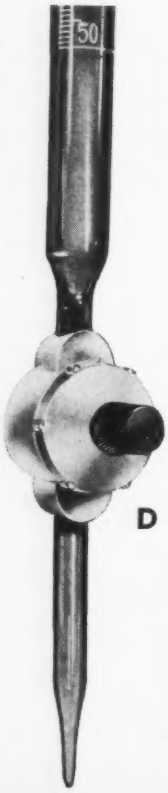
JOHN WILEY & SONS, Inc., 440 Park Avenue South, New York 16, N. Y.

New

LABORATORY SUPPLIES



A



D

A. CCP STIRRER

Clean • Cool • Powerful

Totally-enclosed motor is almost 100% dust-proof, fume-proof. Built-in variable transformer keeps temperature low through long, continuous use. Motor stand fixed to ball-socket joint allows use of stirrer at any angle. 3 separate take-off shafts in housing provide high, low and medium speed operations. Motor control housing clamps firmly to any laboratory stand.

High speed—200 to 5000 RPM
Medium—30 to 1000 RPM
Low—5 to 150 RPM
1/50 hp 115 Volts AC

KS-4B—with Variable Transformer $85.00 each

B. MIGHTY MIDGET STIRRER

High Torque at low Speed

Non-sparkling motor uses a maximum of 40 Watts on 110 Volts AC. Two shafts give RPM ranges from 100 to 2000 (high speed) and 10 to 200 (low speed). Hollow spindle allows setting of shaft to any desired height. Torque increases at low speeds; for example—40 inch-pounds at 10 RPM. Continuous operation guaranteed. Total weight less than 6 pounds.

KS-2B—Delivered with 1 chuck $95.00

(Extra chuck—$5.00 additional)

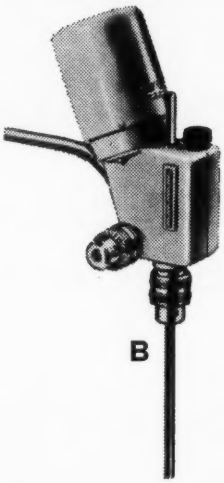
C. EASY-FIX CLAMP HOLDER

Tighten With A Twist
Loosen With A Twist

Wide flange wing nuts make this completely new clamp holder one of the easiest to use. Unique design permits you to tighten or loosen with half-a-turn. Aluminum alloy construction guarantees smooth, rustfree operation.

More Compact • More Simple
More Usable
Than any clamp holder ever before available.

CH-1B—$3.75 Carton of 3
$13.50 Dozen



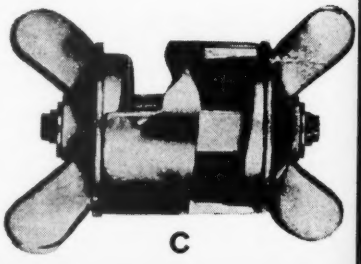
B

D. TAPNIK

The New Non-Stick Burette Stopcock

New diaphragm principle assures delicate, positive, flow control from a drop to a steady stream. No lubrication necessary. Ideal for both acid and alkali solutions. TAPNIK has been widely used as a replacement for defective stopcocks. Extra neoprene and polyethylene diaphragms supplied with each TAPNIK.

TP-1B—TAPNIK only $2.00 each—$21.60 doz.
TP-2B—TAPNIK with 25ml Burette $6.00 each—$32.40 case (6)
TP-3B—TAPNIK with 50ml Burette $6.00 each—$32.40 case (6)



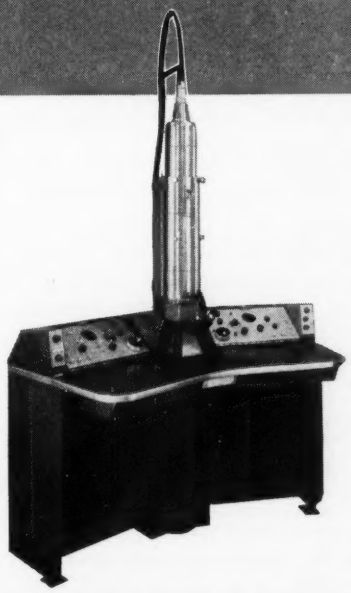
C

Apparatus and Chemicals for Industry and Science

GENERAL LABORATORY SUPPLY COMPANY

P. O. BOX 2607 • PATERSON, N. J. • ARMORY 8-3300

MORE THAN 500 RCA ELECTRON MICROSCOPES ARE NOW IN USE IN BIOLOGICAL RESEARCH



For complete information about the RCA Electron Microscope and versatile line of RCA Electron Diffraction and Spectroscopy equipment, write to RCA Dept. S-287, Bldg. 15-1, Camden, N.J.

The reasons for this overwhelming preference stem from advantages of utmost value to the scientist. They include the EMU's simplicity of operation, excellence of resolution, high reliability and productivity.

Today's EMU-3 Electron Microscope provides the scientist with a valuable working tool. Design of the RCA Microscope permits the biologist to obtain a high volume of top-flight micrographs, with the expenditure of minimum time in adjustment. This is particularly important when serial sections are being studied or other work is involved requiring highest productivity. The RCA EMU-3 is capable of 10 angstrom resolving power or better.

Installation supervision and contract services are available from the RCA Service Company with headquarters in Camden, N. J. and field offices in strategic areas throughout the country.

A NEW LEASING PLAN now makes it possible to obtain all scientific instruments with no down payment, low monthly terms and a favorable option to buy.

RCA®

The Most Trusted Name in Electronics

RADIO CORPORATION OF AMERICA

technicon®

automation

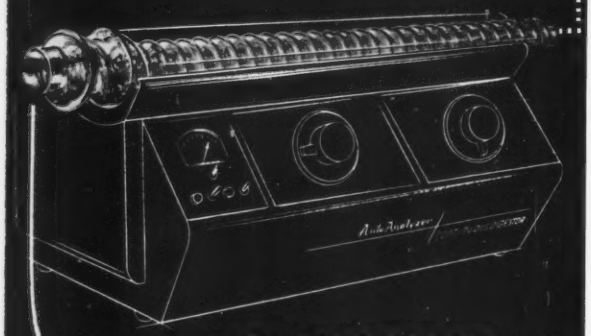
comes to

Kjeldahls*

(and similar digestion-requiring procedures)

it's fully automatic . . .

TEST MATERIAL and DIGESTANT ENTER HERE



and EXIT **FULLY DIGESTED**

IN THE NEW

continuous/automatic

DIGESTOR

Digested material is then introduced into the Technicon

AutoAnalyzer®

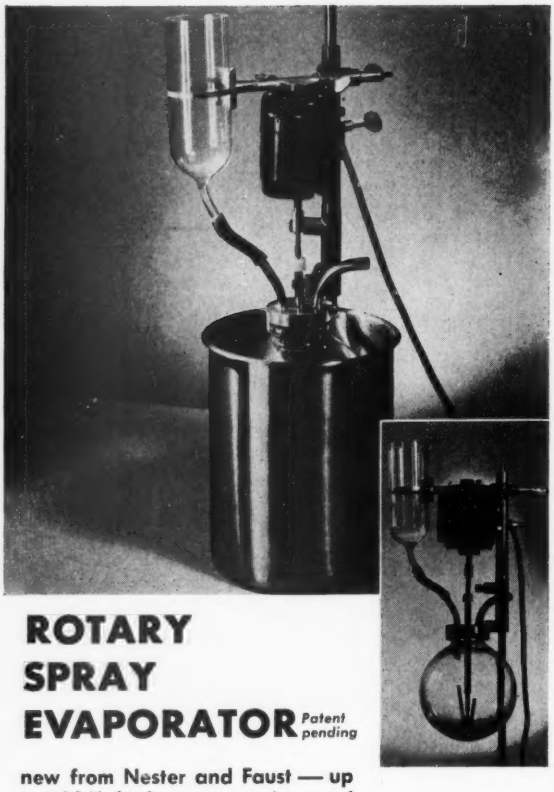
system for quantitation, with the results permanently recorded on a graphed readout.

See it demonstrated at the

FEDERATION MEETING • April 10-14, 1961
Technicon Booth Numbers 119 to 121

**write for publication reprint from Annals of the New York Academy of Sciences*

TECHNICON CONTROLS, INC.
72. RESEARCH PARK • CHAUNCEY, N. Y.



ROTARY SPRAY EVAPORATOR *Patent pending*

new from Nester and Faust — up to 100% higher evaporation rate!

Permitting continuous addition during operation, the rotary spray evaporator utilizes a rotating stainless steel spray agitator which picks up solute and solvent —spraying it onto the heated walls of the flask.

- **Vacuum tight system has capability of 10^{-5} mm Hg — leak-free, eliminating vapor escape.**
- **Excellent for materials with high heat of vaporization and for evaporation of alcohol below room temperature.**
- **Product can be distributed over a small area.**
- **Large quantities of water can be removed after liquid chromatographic run.**
- **Liquid which tends to foam may be added slowly.**
- **Large 2″ neck for easy removal of material.**

For purchase or more information, write:

nester / faust

2401 Ogletown Rd., Newark, Del.

The surest way to get the best in laboratory apparatus, instruments and equipment is to specify **LABLINE...**

Visit Booth No. 75

Alumaloy clamps

Baths

Centrifuges

Chromatography and Electrophoresis apparatus

Cold cabinets

Humidity cabinets

Incubators

Magnetic stirrers

Ovens

Sectional furniture

Slide warmers

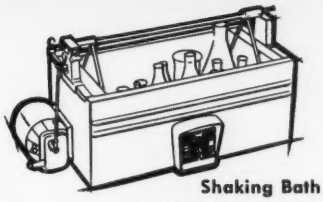
Sterilizers

Timers

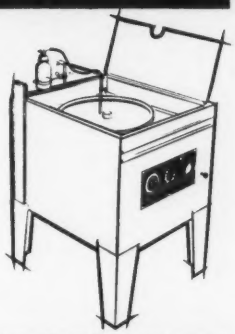
The top line is Labline

LABLINE, Inc.

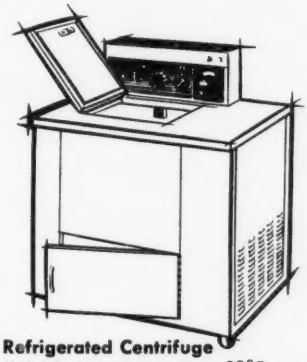
3070-82 W. Grand Ave., Chicago 22, Illinois



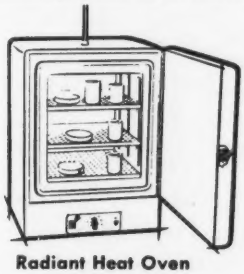
Shaking Bath
All controlled shaking and temperature conditions—0°C to 100°C
Model 3581 .... $645.00



Centrifugally Accelerated Paper Chromatography
Separations in 5–20 minutes
Chromatofuge Model 5060..$1295.



Refrigerated Centrifuge
Maintains temperatures to —20°C
Model 20R, Size 2....$2425.00



Radiant Heat Oven
Range to 200°C
Model 3500...$160.00

Subsidiaries: Chicago Surgical & Electrical Co. • Hudson Bay Company • Lourdes Instrument Corp. • Disposable Laboratory Cages, Inc.

WRITE FOR YOUR
FREE
New LABLINE CATALOG

Please send your up-to-date catalog of advanced designs and information. E31

Name_____

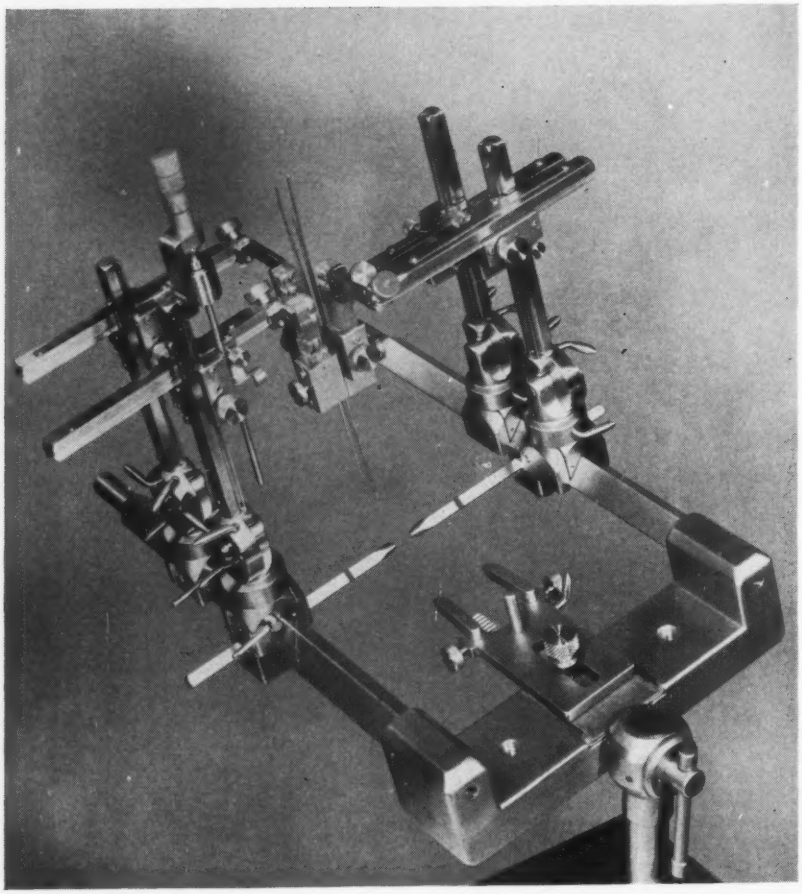
Title_____

Firm or Institution_____

Address_____

City_____ Zone____ State_____

STEREOTAXIC INSTRUMENTS



DOG
CAT — MONKEY
RAT
RABBIT

SPINAL UNIT
ZEROING BAR
MICROMETER DRIVE

PRIMATE CHAIR

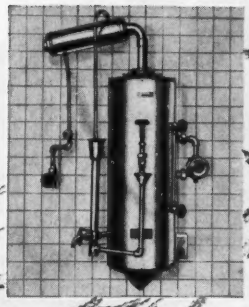
SEE OUR DISPLAY
BOOTH 195
FASEB Convention
Atlantic City, 1961

Write for Literature. Photos on Request

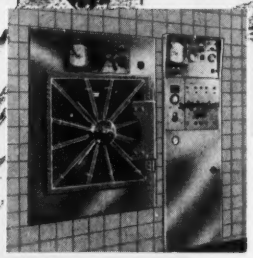
DAVID KOPF INSTRUMENTS

BOX 636

TUJUNGA, CALIFORNIA

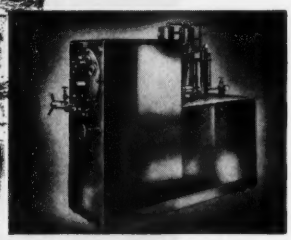


WATER STILLS
Capacities from ¼ to 500 gal./hr.
Steam, Electric or Gas Heat.

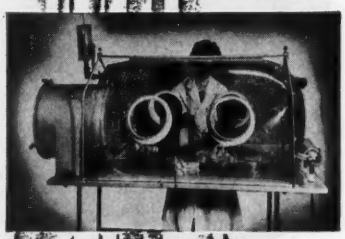


STERILIZERS
Pressure Steam, Gas-Steam,
and Gas. Chambers 16″ x 16″ x 24″
to 60″ x 66″ x 120″.

TALK MICROBIOLOGICAL EQUIPMENT . . .



BIOGEN • *continuous culture apparatus*
For batch or continuous culture of pure
microorganisms in controlled conditions.



DRY BOX
Flexible film chamber.
Efficient, economical,
easy to work with.

and you have to talk to American Sterilizer!

● Here at Amsco, sterilization is still of prime concern. However, to parallel the great strides of modern biological technology, we've developed a number of highly specialized microbiological devices—all designed to do their job better with less personnel time and attention and at a cost well within practical limits.

If you've a problem in this area, a letter to our Scientific and Industrial Department may lead to its economical resolution.

SCIENTIFIC AND INDUSTRIAL DEPARTMENT

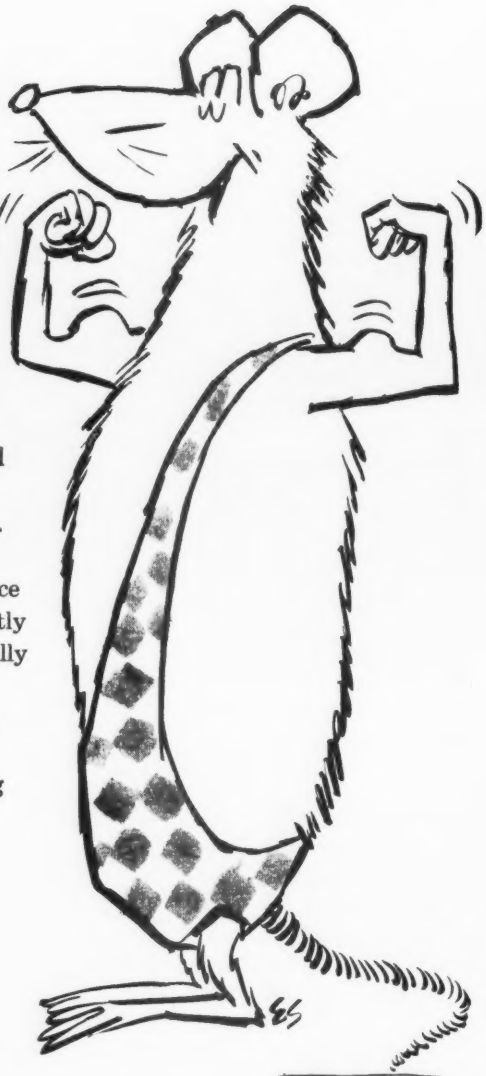
AMERICAN STERILIZER
ERIE • PENNSYLVANIA

World's largest designer and manufacturer of Sterilizers, Operating Tables, Lights and related biological equipment

FREEZE DRY APPARATUS
Laboratory, pilot plant and
production models. Used for the
preservation and concentration
of labile substances.

GERM FREE LIFE APPARATUS
Complete service, including
flexible operating,
rearing and transfer chamber.

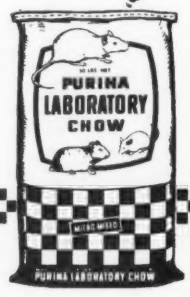
Lab Chow, Man... Lab Chow!



This is our artist's whimsical way of reminding you that Purina Laboratory Chow is fed by more laboratories and rat breeders than any other ration. It also has been a long-time favorite as a mouse maintenance ration. Developed and constantly tested chemically and biologically in Purina's own Research Laboratories. Constant quality control. Get fresh supplies in any desired quantity by calling your local Purina Dealer. Or write H. A. Graff, Ralston Purina Company, St. Louis 2, Missouri.

PURINA LABORATORY CHOWS

5 special rations for all laboratory animals



at the Federation Meeting, Booth 21

Millipore®

invites discussion on

Coliform organisms isolated from potable water sample

Typical apparatus used in the diagnostic laboratory

High volume sterilizing filter holder

GENERAL MICROBIOLOGICAL TECHNIQUES WITH THE MILLIPORE FILTER

Microorganisms quantitatively removed by the Millipore Filter from a liquid or gaseous sample are retained upon its surface (not within its matrix), in a single plane where they may be easily cultured, examined or counted. By superimposing the MF on a nutrient medium in a petri dish for incubation, each organism on the MF's surface may be grown into a visible and identifiable bacterial colony. Alternatively, bacteria may be stained on the MF, the filter rendered transparent by the application of immersion oil, and the organisms examined directly by transmitted light microscopy.

THE MILLIPORE FILTER TECHNIQUE IN EXFOLIATIVE CYTOLOGY

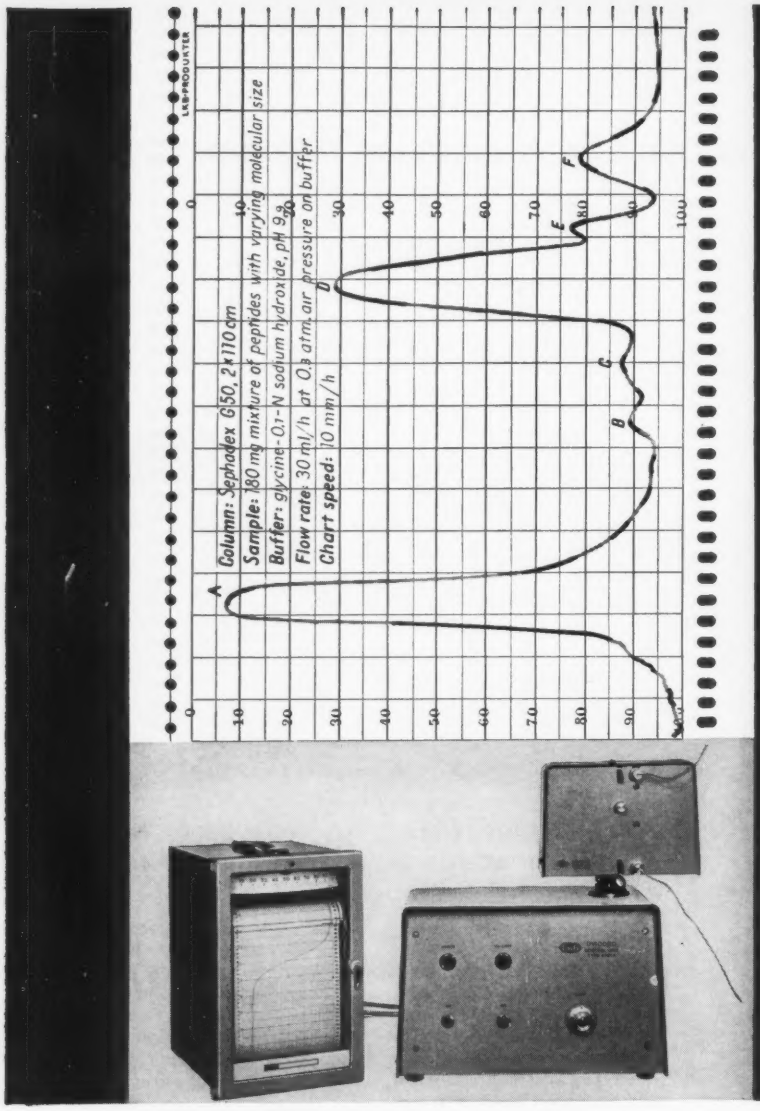
A high degree of precision is obtained with the Millipore filter technique since all cells from a sample are quantitatively retained upon the filter surface. For the analysis of most body fluids the clinical centrifugation procedure, which is quantitative only if all cells are of the same density, is eliminated. The amount of time saved is an important factor to be considered. Original morphological characteristics are not altered since at no time during the staining procedure are the cells allowed to dry. This results in outstanding clarity and third dimensional appearance.

STERILIZATION OF LIQUIDS BY MILLIPORE FILTRATION

The advantages offered by the Millipore filter in sterilizing filtration include positive retention of particles and microorganisms screened from liquids, high flow rates and negligible absorption. The Millipore filter is biologically inert, will not contaminate the filtrate and is disposable. Applications include the sterilization of heat labile solutions such as tissue culture media, I.V. solutions, etc.; in-line pharmaceutical sterilization and particle removal; and the sterilization of blood plasma, serum, albumin etc., using microfiber glass pre-filters.

Detailed information on these and other techniques plus descriptions of Millipore Filters and associated apparatus will be available in Booth 21 or may be obtained by writing to:

Millipore FILTER CORPORATION
BEDFORD, MASSACHUSETTS



THIS UVICORD DIAGRAM SHOWS:

Peptides released from α-casein through enzymatic degradation by action of Lactobacillus lactis. Six peaks are separated by molecular sieving through a column of SEPHADEX*) G50. Change of test tube in the associated fraction collector appears as a colour change of trace from blue to red or vice versa (grey and black in this reproduction).

Peak	Approx. amount of substance (mg)	Molecular weight
A	50	1.4×10^6
B	3	—
C	4	—
D	39	2.7×10^4
E	12	—
F	11	—

Note:
Molecular weights are calculated from the coefficients of diffusion. Peaks B, C, E and F are too small to permit accurate determination of diffusion coefficients.

*) *SEPHADEX is manufactured by AB Pharmacia, Uppsala, Sweden.*

* A FASCINATING SEPARATION RESOLVED WITH LKB 4701 UVICORD

Connected directly to the column outlet, the *Uvicord* measures continuously and without appreciable distortion the UV absorption of an eluate, revealing the interesting components even when present in small quantities.

CHARACTERISTICS

* **HIGH VOLUMETRIC RESOLVING POWER**
Five measuring cells of very small volume are available:

Optical Path Length	1 mm	2 mm	3 mm	4 mm	5 mm
Volume of Cell	0.05 ml	0.1 ml	0.1 ml	0.2 ml	0.3 ml

* **HIGH SENSITIVITY AND WIDE MEASURING RANGE**
Example I. 0.00036 % thyrosine in 0.1-N NaOH, 5 mm cell ≃ 10 mm pen deflection (E = 0.05)
0.036 % thyrosine in 0.1-N NaOH, 1 mm cell ≃ 100 mm pen deflection (E = 1)
Example II. 0.02 % serum albumin in 1-% NaCl, 5 mm cell ≃ 10 mm pen deflection (E = 0.05).

* **LOW UV DOSE ON SENSITIVE MATERIAL**
Absorbed UV energy is approx. 1 milliwatt-second per ml at 10 ml/hour. This corresponds to a deterioration factor in bovine serum albumin of only 0.0001.

* **HIGH TIME AND TEMPERATURE STABILITY**
Drift is less than 5 % (transmission) in 24 hours and less than 5 % for room-temperature changes of 25 °C, either from 25 to 30 °C, or with coldroom attachment from 0 to 25 °C.

* **ADAPTABILITY**
Connects to any 10 or 100 millivolt, or 0.3 milliamp. standard recorder. Suggested choice is the LKB 6510 D.C. recorder, which provides distinct marking of fractions by a colour change of trace.

COMPATIBLE EQUIPMENT
for
chromatography and electrophoresis:

ChroMax© Columns for preparative paper chromatography
Column Electrophoresis Apparatus
MiniFlow all-glass Micropump
Conductolyzer, records salt gradients
RadiRac© Automatic Fraction Collectors

General catalog available

Write for bulletin 4700

LKB

LKB Instruments Inc., 4840 Rugby Ave., Washington 14, D.C.

International Sales Headquarters: LKB-Produkter AB, P.O.B. 12220, Stockholm 12, Sweden

Just Published

ANNUAL REVIEW OF PHYSIOLOGY

MARCH 1961 VOL. 23 650 PAGES

EDITORS: *V. E. Hall, F. A. Fuhrman, A. C. Giese*

CONTENTS:

Pharmacology in a Changing World, *Carl F. Schmidt*

Energy Metabolism, *Max Kleiber and Terence A. Rogers*

Transport Through Biological Membranes, *I. S. Edelman*

Comparative Physiology: Photoperiodicity, *Donald S. Farner*

Physiological Aspects of Aging in Man, *Nathan W. Shock*

Respiration, *S. M. Tenney*

Digestive System, *Henry D. Janowitz*

Liver, *Jesse L. Bollman*

Skin, *Walter C. Lobitz, Jr., and Farrington Daniels, Jr.*

Adenohypophysis and Adrenal Cortex, *Edmund B. Flink*

Reproduction, *Joseph Thomas Velardo*

Peripheral Circulation, *David F. Bohr*

Heart, *Brian F. Hoffman and Frederic Kavaler*

Excitation and Conduction, *K. Frank and M. G. F. Fuortes*

Somatic Functions of the Nervous System, *P. Buser and A. Rougeul*

Visceral Functions of the Nervous System, *G. Ström*

High Nervous Functions: Brain Functions and Learning, *E. Roy John*

Hearing, *Merle Lawrence*

Kidney, Water and Electrolyte Metabolism, *H. Wirz*

Major Problems in Muscle Physiology, *W. F. H. M. Mommaerts, with A. J. Brady and B. C. Abbott*

Comparative Physiology: Transmitter Substances, *Ernst Florey*

ENTOMOLOGY

JANUARY 1961 VOL. 6 465 PAGES

EDITORS: *E. A. Steinhaus, R. F. Smith*

CONTENTS:

Darwin's Contributions to Entomology, *Jeanne E. Remington and Charles L. Remington*

Insect Nutrition, *H. L. House*

Nutritional Factors in Insect Resistance to Chemicals, *H. T. Gordon*

Principles of Insect Cold-Hardiness, *R. W. Salt*

The Biochemistry of Insect Hemolymph, *G. R. Wyatt*

The Role of Mitochondria in Respiratory Metabolism of Flight Muscle, *Bertram Sacktor*

Diurnal Rhythms, *Janet E. Harker*

The Theoretical and Practical Study of Natural Insect Populations, *O. W. Richards*

Principles of Insect Predation, *C. S. Holling*

Biological Control of Pest Insects in Europe, *M. J. Franz*

Sampling Crop Pests and Their Hosts, *A. H. Strickland*

Biology of Chiggers, *Manabu Sasa*

The Phenomenon of Industrial Melanism in Lepidoptera, *H. B. D. Kettlewell*

A Review of the Phylogeny of Mites, *Tyler A. Woolley*

Palaeoentomology, *O. Martynova*

The Analysis of Insect Embryogenesis, *S. J. Counce*

The Chemistry of Organic Insecticides, *T. R. Fukuto*

Mode of Action of Insecticides, *C. C. Roan and T. L. Hopkins*

Ecological Aspects of Plant Virus Transmissions, *Walter Carter*

Mechanism of Transmission of Viruses by Mosquitoes, *Roy W. Chamberlain and William D. Sudia*

Arthropod Vectors as Reservoirs of Microbial Disease Agents, *Cornelius B. Philip and Willy Burgdorfer*

Transmission of Filarioid Nematodes, *Frank Hawking and Michael Worms*

$7.00 postpaid (U.S.A.); $7.50 postpaid (elsewhere)

ANNUAL REVIEWS, INC.

231 GRANT AVENUE, PALO ALTO, CALIFORNIA

B-D LABORATORIES

salutes the Federation of American Societies for Experimental Biology Conventioneers

Reviewing the past year's achievements and previewing future progress at your annual convention is one of the most vital ways in which you and your colleagues contribute to the spread of new ideas and research findings.

As manufacturers, B-D Laboratories fully appreciates the value of these open scientific forums. Frank, practical discussions with the many consumers of B-B-L, Cappel and Falcon products inevitably aid us in the development of better products and better services.

We look forward to this opportunity to meet and talk to FASEB members in Atlantic City.

Baltimore Biological Laboratory · Cappel Laboratories · Falcon Plastics
Divisions

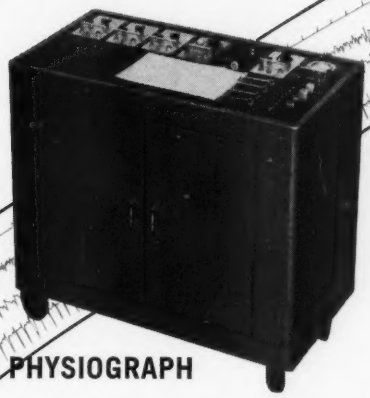
B-D

B-D LABORATORIES, INC.
Rutherford, New Jersey

B-B-L, CAPPEL and FALCON are trademarks.

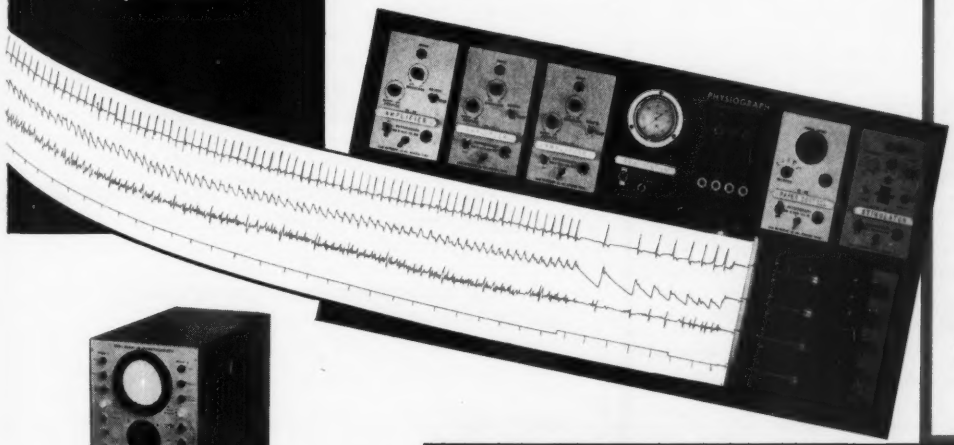
VERSATILITY in . . .
Physiological Measurements
with plug-ins

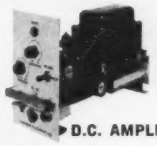
myographs
•
pneumographs
•
pressure transducers
•
Preamplifiers
cardiac
high gain
carrier
D.C.
•
pulse pick-ups
•
heart sound microphones
•
strain gauges
•
Stimulators
electrical
photic
tactile
acoustic
•
electrosphygmograph
•
oximeters
•
drop counters



THE PHYSIOGRAPH

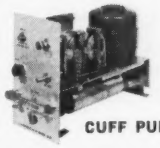
- Standardized interchangeable MODULES for recording a wide spectrum of physiological events
- Extreme ease and SIMPLICITY of operation
- RUGGED construction with RELIABLE components
- Each PLUG-IN UNIT may be removed with a simple half-turn of its locking handle
- A growing selection of INEXPENSIVE TRANSDUCERS
- A mobile cabinet with ample STORAGE for all transducers, preamplifiers, additional plug-in units, recording paper and other laboratory equipment
- Can be FLUSH-MOUNTED in existing laboratory furniture





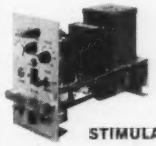
D.C. AMPLIFIER

PAPER CONTROL



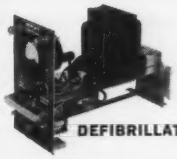
CUFF PUMP

RESPIRATOR

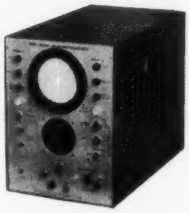


STIMULATOR

CARDIOTACH



DEFIBRILLATOR



DUAL-BEAM NEUROPHYSIOGRAPH

Complete study units available for oscilloscopic investigation of bioelectric potentials.

E & M INSTRUMENT CO., INC.

P. O. Box 14013 • 6030 England • Houston 21, Texas • Ph: RI 7-7813

Manufacturers of Medical Electronic Equipment

A Checklist of Important Books

See you at the Convention Booth 184

An Atlas of Clinical Hematology

By Katsuji Kato, Ph.D, M.D.

This new superbly illustrated diagnostic aid contains 92 full color plates—exactingly reproduced. Complementary line drawings, routinely paired with each plate, and an authoritative text, further identify morphologic characteristics for study and diagnosis.

266 pages, $25.00

The Human Blood Proteins—Methods of Examination and their Clinical and Practical Significance

By Prof. Ferdinand Wuhrmann, M.D. and Charlie Wunderly, Ph.D.

in this new and authoritative English translation of the internationally acclaimed classic, "Die Bluteiweisskoerper des Menschen," the American reader now has an opportunity to put to full practical utilization the complete current knowledge of human blood proteins.

496 pages, 184 illus., with 12 color plates, $15.75

Lipidoses—Diseases of the Cellular Lipid Metabolism
(Third Edition; Revised and Enlarged)

By Siegfried J. Thannhauser, M.D., Ph.D.

"...detailed and exhaustive account of the subject ...highly recommended as an authoritative account of a most important group of diseases by one of the leaders and early authorities in the field."—*Calif. Med.*

600 pages, 126 illus., $19.75

Advances in Blood Grouping

By Alexander S. Wiener, M.D., F.A.C.P.

In this new volume, Dr. Wiener utilizes his own investigations, which have covered almost every aspect of the field, to provide a compact developmental survey of current knowledge. Achieves the same high standards of past works.

564 pages, $11.00

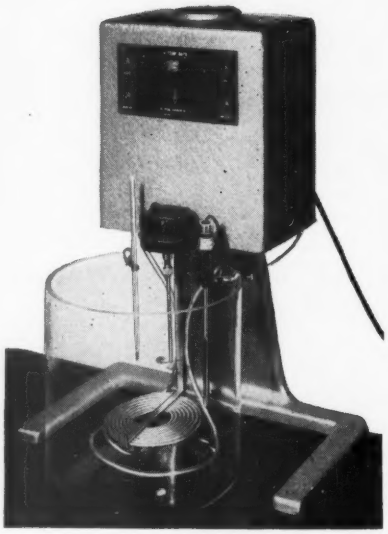
Available from your medical bookseller or directly from

GRUNE & STRATTON, INC.

381 Park Avenue South New York 16, N. Y.

NEW WACO LO-TEMP BATHS

Controlled Cooling and Heating
Minus 10° C to Plus 65°C



● **WIDE RANGE** Visibility bath with BOTH mechanical refrigeration and heating! Provides constant temperature from Minus 10°C to Plus 65°C using 10″ of liquid in a 12″ uninsulated pyrex jar. Using less liquid Minus 20°C is obtainable.

● **SENSITIVITY** Mercury thermoregulator and a WACO Thyratrontube Relay controls operation of the compressor and heating unit within plus or minus .01°C.

ALREADY USED FOR—Viscosity vapor pressure and other physical data determination, organic synthesis. ASTM petroleum tests, etc. Also as COOLANT CIRCULATING SYSTEM for spectrophotometers, refractometers, distillation condensers.

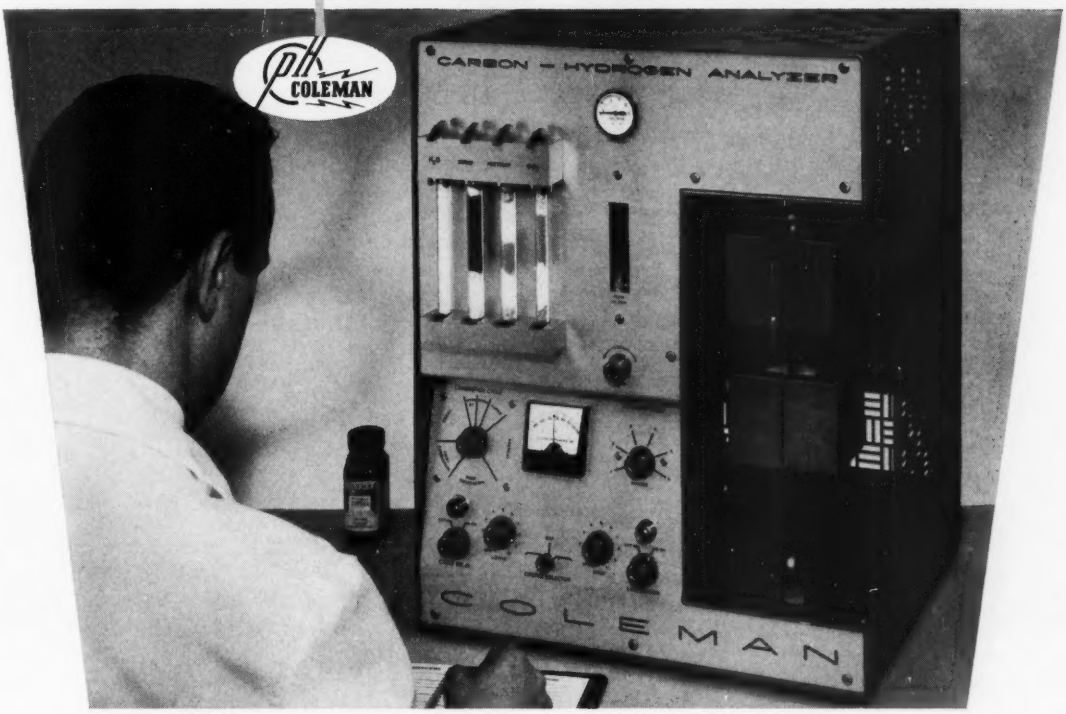
NO. P882 WACO LO-TEMP REFRIGERATED BATH with Pyrex jar 12″ diameter. For 115 volt 60/60 cycle AC.....$390.00

NO. P884 WACO RECTANGULAR REFRIGERATED BATH. Inside dimensions 29″ long x 14″ wide x 10″ deep. Range MINUS 35°C to PLUS 50°C. Three-wall insulated construction.....$955.00

• **Other sizes and many accessories available to fit your needs. Please write for WACO BATH BULLETIN P-12 for complete information.**

LABORATORY SUPPLIES AND CHEMICALS
WILKENS-ANDERSON CO.
4525 W. DIVISION ST • CHICAGO 51, ILLINOIS

COLEMAN



NEW! Automated analysis of carbon and hydrogen

Coleman's new Carbon-Hydrogen Analyzer is **fully-automated** to bring new speed, new accuracy, and new ease to the analysis of these elements in organic materials. It programs and controls all variables—flow rates, combustion times and temperatures—of the accepted combustion method for carbon and hydrogen determinations.

This new instrument is valuable in laboratories concerned with foods, pharmaceuticals, petroleum, organic intermediates and similar materials. Outstanding characteristics are:

SPEED: Complete determination within an 8-minute operating cycle; routine analyses at the rate of 4 to 5 per hour.

ACCURACY: Results correspond to theory within ± 0.2% carbon and ± 0.2% hydrogen.

CONVENIENCE: All operations performed automatically—operator calculates results after differential weighing of absorption tubes.

VERSATILITY: Flexible controls permit any combustion analysis up to 1100° C., with samples down to the milligram range.

ECONOMY: Pays for itself by increasing analytical precision and output. Uses commercial grade oxygen and readily-available reagents. Takes only 18 inches on laboratory bench.

ANALYTICAL RANGE

Hydrocarbons—paraffins, aromatics, naphthenes, aviation fuels, low-boiling materials;

Oxygen-containing materials—alcohols, phenols, glycols, ethers, esters, ketones, aldehydes, acids;

Nitrogen-containing materials—amines, amides, cyanides, cyanates, hydrazines, pyridines, nitro compounds;

Sulfur-containing materials—mercaptans, sulfides, disulfides, thiophenes;

Halogen-containing materials—alkyl mono- and dichlorides, alkyl bromides;

Mixtures of these materials.

See another FIRST in automated analysis by Coleman . . . Booths 66-67 at the FASEB-Meeting

Ask your Coleman dealer for more information or write for Bulletin WB-272.

Order and simplification are the first steps toward mastery of any science

COLEMAN INSTRUMENTS, INC., MAYWOOD, ILLINOIS

Important Reprints in Biology
And Allied Fields

Annual Review of Biochemistry

Vols. 1–5, 1932–1936
Vols. 8–11, 1939–1942
Vols. 14–15, 1945–1946
Single volumes, cloth bound $11.00
Vols. 6–7, 1937–1938 . . . . . *In preparation*
Vol. 12, 1943 . . . . . *In preparation*

Biochimica et Biophysica Acta

Vol. 4, 1950
Vols. 7–11, 1951–1953
Vols. 13–14, 1954
Vols. 16–18, 1955
Single volumes, paper bound $25.00

Biological Abstracts

Vol. 12, 1938
Paper bound in 2 parts $95.00
Vol. 14, 1940
Vol. 15, 1941 (*Avail. Spring 1961*)
Single volumes, paper bound 110.00
Vol. 18, 1944
Vol. 21, 1947
Single volumes, paper bound 100.00
Vol. 13, Nos. 2, 4, 7, 9, 1939
Vol. 14, Nos. 1, 2, 1940
Vol. 15, Nos. 1, 2, 1941
Single issues, paper bound 10.00
Vol. 15, Nos. 3, 4, 6, 7, 1941
Single issues, paper bound 15.00
Vol. 15, No. 8, 1941
Vol. 17, Nos. 1, 2, 1943
Single issues, paper bound 17.50
Vol. 29, No. 1, 1955
Paper bound issue 15.00
Vol. 13, 1939 (*Avail. Spring 1961*)
Vol. 15, No. 5, 1941 (*Avail. Spring 1961*)
Vol. 20, Nos. 1, 3, 1946 (*Avail. Spring 1961*)

Journal of Biological Chemistry

Vols. 1–25, 1905–1916
Cloth bound set $425.00
Paper bound set 375.00
Single volumes, paper bound 15.00
Vols. 132–166, 1940–1946
Paper bound set 770.00
Single volumes, paper bound 22.00

Journal of General Physiology

Vols. 1–2, 1918/19–1920
Vols. 24–25, 1941–1942
Single volumes, paper bound $25.00
Vol. 1, Nos. 4, 6, 1918/19
Vol. 25, Nos. 1, 2, 1942
Single issues, paper bound 4.50

Pharmacological Reviews

Vols. 1–2, 1949–1950
Single volumes, paper bound $16.00

Plant Physiology

Vols. 1–4, 1926–1929
Single volumes, paper bound $20.00

Society for Experimental Biology and Medicine: Proceedings

Vols. 1–13, 1903/04–1915/16
Cloth bound set $200.00
Paper bound set 175.00
Vols. 1–3, 1903/04–1905/06
Single volumes, paper bound 10.00
Vols. 4–13, 1906/07–1915/16
Single volumes, paper bound 15.00

JOHNSON REPRINT CORPORATION
New York and London
111 Fifth Avenue, New York 3
17 Old Queen Street, London, S.W.1

80% of Clinical Laboratories Agree...

Simplastin®

Here are some of the major reasons for SIMPLASTIN's use in 21,384,000 determinations of prothrombin time during 1960:

1. **Assured reproducible results.** 80% of clinical laboratories agree—by routine use—that SIMPLASTIN is the thromboplastin reagent that gives "best reproducibility"[1] of results.

2. **Lowered burden on laboratories.** For dependability and ease in handling, laboratory directors select SIMPLASTIN, a quality controlled freeze-dried thromboplastin extract. Already combined with calcium, it is prepared for use merely by adding distilled water.

3. **Guaranteed controls** for PH, ionic strength, suspended solids, particle size, moisture and stability in varying temperatures.

4. **Contains no preservative** or artificial accelerators for prothrombin activation, as are found in liquid preparations (see note).

NOTE: Attention is again being given to commercially available thromboplastins in liquid form. A preservative must be added to a liquid thromboplastin to keep it stable. These preservatives are: phenol (carbolic acid) or phenolic compounds, which reduce pH far below optimum in the therapeutic range. It is further established that such compounds artificially accelerate apparent prothrombin activity to give falsely speeded prothrombin times.[2] In addition, these compounds act as enzyme poisons,[3,4] and inhibit catalase activity which is present in all animal tissue[5] and can be detected by the well-known benzidine test.[4,6] A negative or weak benzidine reaction on an extract of animal tissue is convincing evidence that enzyme inhibition has occurred.

order Simplastin today, your safeguard of dependable results

GENERAL DIAGNOSTICS DIVISION **WARNER-CHILCOTT** DIV. MORRIS PLAINS, N.J.

1. Innella, F., and Redner, W. J.: Am. J. Clin. Path. *33*:1, 1960. 2. Gerber, C. F., and Blanchard, E. W.: Am. J. Physiol. *144*:447, 1954. 3. National Institutes of Health: Phenol and its Derivatives. The Relation Between Their Chemical Constitution and Their Effect on the Organism. Bulletin 190, Washington, D. C., Government Printing Office, 1949, pp. 14-17. 4. Hawk, P. B., Oser, B. L., and Summerson, W. H.: Practical Physiological Chemistry, Ed. 13, New York, The Blakiston Division, McGraw-Hill Book Company, Inc., 1954, p. 319. 5. Fruton, J. S., and Simmonds, S.: General Biochemistry, New York, John Wiley & Sons, 1953, pp. 155, 344. 6. Hanks, G. E., Cassell, M., Ray, R. H., and Chaplin, H.: J. Lab. & Clin. Med. *56*:486, 1960.

AT LAST!
A Really Convenient
AUTOMATIC SYRINGE ATTACHMENT

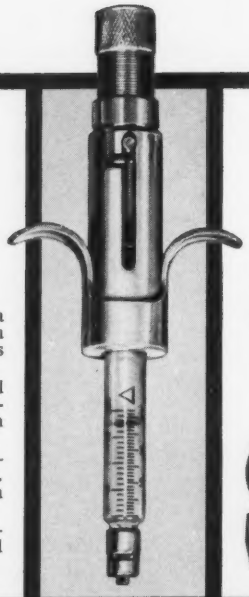
REPEATS PRESET VOLUME

ASSEMBLES INSTANTLY — Just a few simple parts that fit together in a jiffy! Comes apart or reassembles with just a slight twist.

PRECISE CONTROL — Fine-thread adjusting screw permits minute movements. Lock-nut and collar design holds setting accurately.

FITS STANDARD SYRINGES — Available in ¼-½, -1-2-5 and 10 cc. sizes to fit the syringes you have on hand.

REPEATS PRESENT VOLUME — Syringe can be calibrated to any desired setting.



Ask your laboratory supply dealer for particulars, or write directly to:

Scientific Industries Inc.

DEPT. 3A, 15 PARK STREET, SPRINGFIELD, MASSACHUSETTS

See our Booth at Federation Exhibit, Atlantic City, April 10–14th.

STYLE MANUAL FOR BIOLOGICAL JOURNALS

Prepared by:

THE COMMITTEE ON FORM AND STYLE OF THE CONFERENCE OF BIOLOGICAL EDITORS

The *Style Manual* is designed for biologists preparing manuscripts for publication in scientific journals. Style is interpreted broadly to mean forms of expression in scholarly writing, and the general technical requirements of journals, such as details for typing manuscripts, standard abbreviations, and citation of references. The instructions and recommendations represent good usage and practice.

The Conference of Biological Editors committee on Form and Style under the chairmanship of Dr. J. R. Porter, has worked for three years preparing this *Manual*. The drafts of the manual have been read by approximately 100 editors and publishers. Recommendations proposed by the International Standards Organization, the International Council on Scientific Union's Abstracting Board, the International Union of Biological Sciences, the International Committee on Weights and Measures, and the American Standards Association were considered carefully by the Committee and adopted.

The editorial boards of 76 biological journals have adopted the manual in whole or in part, so as to establish uniform standards in biological publications. Scientists submitting manuscripts to any of the 76 journals should use the style manual as a guide.

92 pages/Illustrated/1960 Price $3.00

ADDRESS ORDERS TO:

Subscriptions

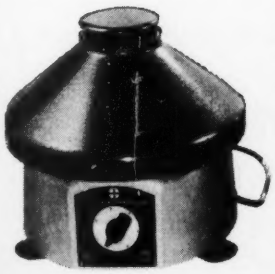
AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES

2000 P Street, NW, Washington 6, D. C., U.S.A.

Separate and Apart...

In a class by itself—the Clay-Adams centrifuge line—for virtually every office or laboratory separation procedure. Models include high speed or hand driven, heavy duty or lightweight . . . single or multi-purpose table machines. All Clay-Adams centrifuges are designed for optimum speed and efficiency. All feature precision engineering, sturdy construction; permanent lubrication insures years of trouble-free operation.

Adams Safety-Head Centrifuge



Ideal for all precipitate separations frequently performed in the clinical laboratory or physician's office. Efficient angle head for six 15 ml. or smaller tubes provides rapid centrifugation. Compact, shock mounted, portable.

Other models available from your dealer include:

Sero-Fuge®: Ideal for blood banks. Specifically for Coombs Test; blood grouping, typing, and cross-matching.

Safeguard Centrifuges: For hospital, clinical and hematology laboratories with a relatively heavy work load. Wintrobe hematocrits, blood chemistries, and other separations rapidly performed.

Micro-Hematocrit: For blood banks, clinical and hospital laboratories. Provides complete separation of serum and red cells in 3 minutes.

in laboratory science . . . trusted tools for precision performance

Clay-Adams

New York 10, N.Y.

did you know you can

MONITOR

the

BLOOD STREAM

of man or animal
continuously/automatically
for changes in...

GLUCOSE
CREATININE
CHLORIDE
CALCIUM
CO_2
UREA
SODIUM
POTASSIUM
AMMONIA
SALICYLIC ACID
PARA AMINOHIPURRIC ACID
pH
METAHEXANIDE

Extracting as little as 6 ml. of Blood per hour

A two-lumen cannula is inserted into the blood stream; the inner cannula aspirates blood while the outer cannula continuously feeds heparin into the blood aspirated, without letting heparin into the blood stream...

with the TECHNICON®

AutoAnalyzer®

Write and we will forward reprints of published papers

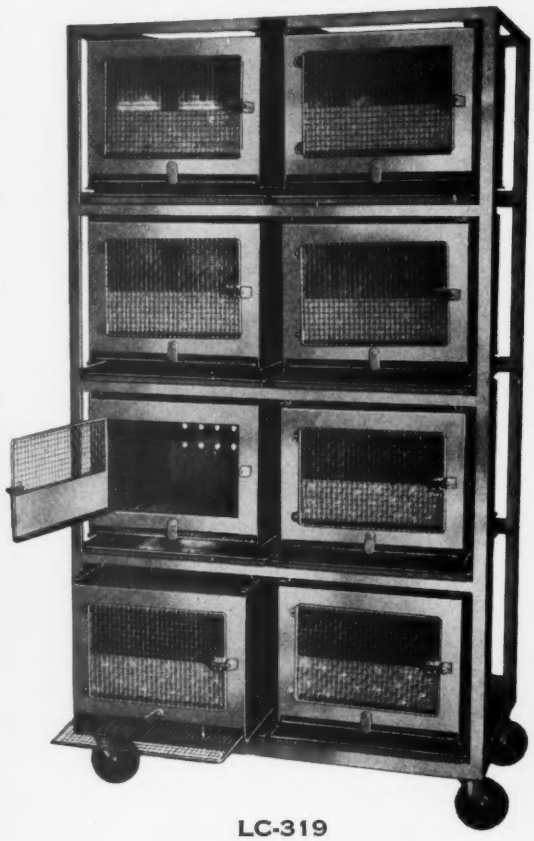
TECHNICON INSTRUMENTS CORP.
RESEARCH PARK • CHAUNCEY, NEW YORK

WAHMANN

Designers and Manufacturers

LABORATORY

ANIMAL CARE EQUIPMENT



LC-319

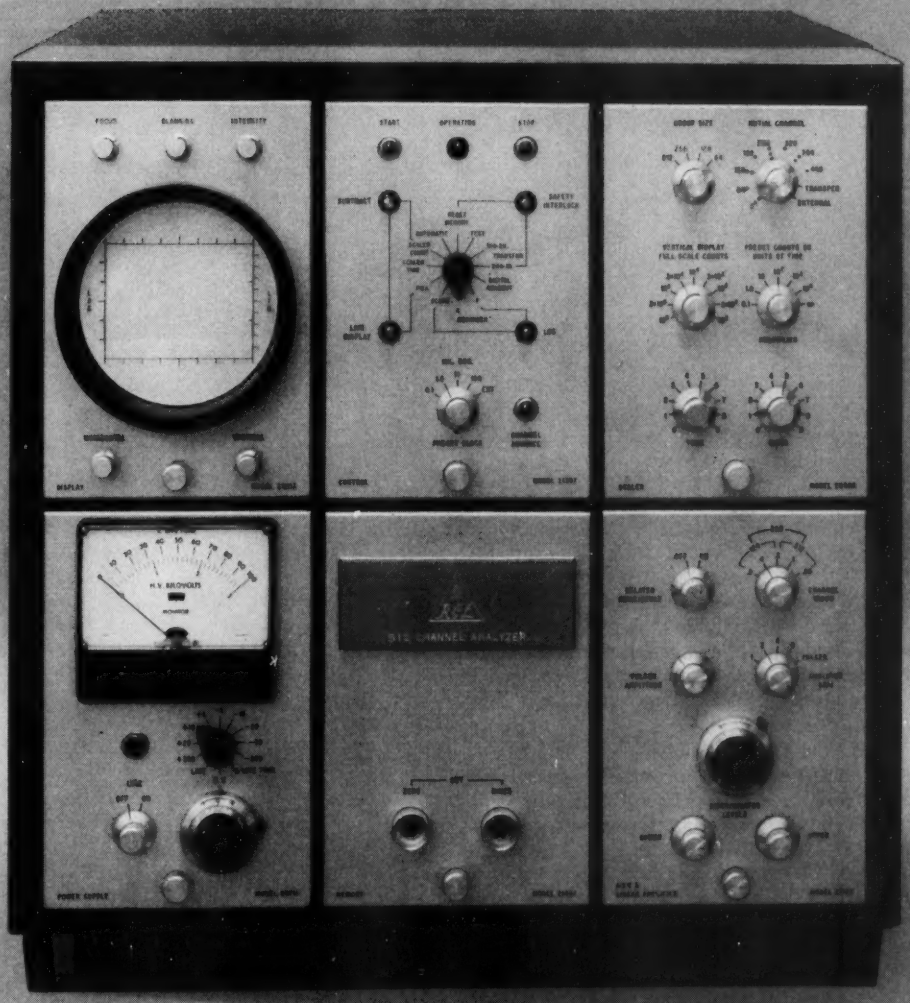
SUSPENDED RABBIT CAGES

Cages · Racks · Cage Systems · Food Bins
Food and Water Devices · Sterilizers
Scales · Operating and Autopsy Tables
Stainless Drinking Tubes · Activity Cages

Write for Our Complete Catalog

GEO. H. **WAHMANN** MFG. CO.
1123 E. BALTIMORE ST., BALTIMORE 2, MD.

THE NEW SOLUTION
FOR YOUR PULSE HEIGHT ANALYSIS
AND COUNTING PROBLEMS



512 Channel Pulse Height Transistor Analyzer and Scaler*

Memory capacity—1,000,000 counts per channel in coded decimal . . . Switch selected log or linear display . . . Linear amplifier . . . Live display during accumulation . . . Channel subgrouping in multiples of 64 . . . Super-stable ± H. V. power supply—300 to 3000 V. at 5 ma . . . Preset live time—0.1 milliseconds to 99,000 seconds in 700 steps . . . Preset Time Scaler Mode for decay studies

*Also available with 256 Channel Memory Module

ALL THESE SPECIAL FEATURES ARE AVAILABLE AT NO EXTRA COST WITH STANDARD RCL MODELS 20618 (512) AND 20617 (256).

for additional information write:

RADIATION COUNTER LABORATORIES, INC.
5121 WEST GROVE • SKOKIE, ILLINOIS, U.S.A. • YORKTOWN 6-8700

RIGHT ACROSS THE BOARD

at Booths 84 & 85

SERVALL®

CENTRIFUGES SERVE YOU BEST!

SS-1 Superspeed — "the workhorse of the modern laboratory" 32,700 x G

SS-1 Superspeed with Continuous Flow System

Small & Medium Centrifuges 5 rotors on one base

SS-3 Automatic Superspeed 17,000 rpm 34,800 x G

SS-4 Enclosed Superspeed — Entire Control Panel snaps out for remote operation

From the SERVALL Small and Medium Centrifuges that offer five different rotors on one basic motor assembly plus a huge variety of tube combinations, to the RC-2, the latest in Refrigerated Centrifugation, SERVALL Centrifuges Serve You Best.

The SERVALL SS-1 Superspeed, SS-3 Automatic Superspeed, SS-4 Enclosed Superspeed and RC-2 Automatic Refrigerated Superspeed Centrifuges, all designed to accept the unique SERVALL 8 to 2 Tube Direct Sedimentation Continuous Flow System, lead the field in a *functional versatility* that is determined by one thing: the modern researcher's requirements—*your* requirements.

Automation, special rotors such as particle counting and field-aligning, high centrifugal force, safety features, operational reliability and simplicity, whichever is *your* major concern SERVALL specifications cover it.

And remember, in the U.S. you get direct, personal service on all your needs from SERVALL-*trained representatives. In Canada and elsewhere* SERVALL *Centrifuges and Instruments are available from specially appointed distributors.*

Also to be shown at Booths 84 & 85: SERVALL-Ribi Cell Fractionation Apparatus; SERVALL RC-3 general-purpose Refrigerated Centrifuge; SERVALL HB-4 Titanium Horizontal Rotor. Be sure not to miss these significant developments in laboratory instrumentation.

RC-2 Automatic Refrigerated Centrifuge — basic unit includes standard 8 x 50 ml Superspeed Rotor — up to 37,000 x G

Ivan Sorvall, Inc. Norwalk, Connecticut

ILLUSTRATED LITERATURE UPON REQUEST FOR CATALOG FP-3PGC

Medicinal Chemistry
Second Edition
edited by ALFRED BURGER, *University of Virginia*
1960 7 x 10 1258 pages $37.50

Pharmaceutical Analysis
edited by TAKERU HIGUCHI, *University of Wisconsin*, and EINAR BROCHMANN-HANSSEN, *University of California*
1961 In press

Progress in Drug Research
a new series edited by ERNST JUCKER
Volume 1: 1960 670 pages $17.50
Volume 2: 1961 c. 750 pages $22.00
(*Western Hemisphere only*)

Methods of Biochemical Analysis
Volumes 1 (1954) through 8 (1960)
edited by DAVID GLICK, *University of Minnesota*
Volume 9: 1961 In press

Organic Electronic Spectral Data
Published under the auspices of Organic Electronic Spectral Data, Inc.
Volume 1 (1946–52) edited by M. J. KAMLET
1244 pages $28.50
Volume 2 (1953–55) edited by H. E. UNGNADE
775 pages $17.50
Additional volumes in preparation
Subscription prices available

Physical Methods of Organic Chemistry
Third Edition In Four Parts
edited by ARNOLD WEISSBERGER, *Eastman Kodak Company*
1960 Part 1: 930 pages $24.50; Part 2: 938 pages $24.50; Part 3: 870 pages $24.50; Part 4: 984 pages $26.00

Fatty Acids
Their Chemistry, Properties, Production, and Uses
Second Edition In Four Parts
edited by KLARE S. MARKLEY
Part 1: 1960 724 pages $22.50
Part 2, 3, 4: In preparation

Complete Catalog
available on request.

Quantitative Chemical Techniques of Histo- and Cytochemistry
by DAVID GLICK
1961 In press

Advances in Enzymology
and Related Subjects of Biochemistry
Volumes 1 (1941) through 22 (1960)
edited by F. NORD, *Fordham University*
Volume 23: 1961 In press

BOOKS from Interscience

Visit Booth 7 1961 Federation Meeting

Nucleoproteins
Proceedings of the 11th Solvay Conference on Chemistry, Brussels, 1959
1960 364 pages $10.50

Bacteriophages
by MARK ADAMS
1959 620 pages $15.00

Chromatographic and Electrophoretic Techniques
Second Edition In Four Volumes
by IVOR SMITH
Volume 1: CHROMATOGRAPHIC TECHNIQUES
1960 640 pages $10.75
Volume 2: ZONE ELECTROPHORESIS
1960 216 pages $5.50 (*U. S. A. only*)

Introduction to Immunochemical Specificity
by WILLIAM C. BOYD, *Boston University*
1961 In press

INTERSCIENCE PUBLISHERS, INC.
250 Fifth Avenue New York 1, N. Y.

New home of

PORTER

MATHEWS COMPANY, Inc.

PRINCETON, NEW JERSEY

One of America's leading manufacturers of small animal cages and laboratory equipment.

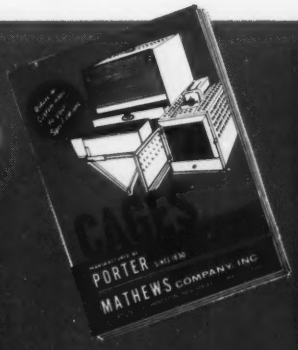
To be completed by May 1, 1961, this ultra-modern structure on U.S. Route #1, Princeton, New Jersey, will house both plant and executive offices of Porter-Mathews Company, Inc.

For years, America's foremost laboratories, hospitals, schools and industrial companies have specified equipment by Porter-Mathews.

Sturdy, streamlined construction—versatile and efficient in use—sanitary, easy to clean—these characterize products by Porter-Mathews.

(Available in both Deluxe and Custom Lines.)

Visit Porter-Mathews in Booths 22-A, 22-B at the FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY MEETING, Convention Hall, Atlantic City, New Jersey.



NOW AVAILABLE: Porter-Mathews colorful, new catalog. Loose-leaf, always current, it contains the entire PM Deluxe and Custom lines.

Write:

PORTER SINCE 1830

MATHEWS COMPANY, Inc.

U.S. ROUTE # 1, PRINCETON, NEW JERSEY • WAlnut 1-2550

See the Latest in

* ULTRASONIC CELL FRACTURING
* CHROMOTOGRAPHY PAPER ELECTROPHORESIS
* CONTINUOUS FLOW CENTRIFUGATION
* LOW COST ANIMAL CAGING
* "REMOTE VISION" CLOSED CIRCUIT TV MONITORING

AND MANY MORE

OR CONTACT YOUR NEARBY WILL LAB SUPPLY AND SERVICE CENTER

Will

CORPORATION
and Subsidiaries

ROCHESTER 3, N. Y. • ATLANTA 25, GEORGIA
NEW YORK 52, N. Y. • BALTIMORE 24, MD.
BUFFALO 5, N. Y. • SO. CHARLESTON 3, W. VA.

Will Booth #46

FACEB MEETINGS
April 10–14

Placement Service Atlantic City

CONVENTION HALL

Offices on Main Arena Floor

Open Sunday April 9, 1:00 P.M.–5:00 P.M.

Monday, April 10–Thursday April 13

8:15 A.M.–5:00 P.M.

Registration of Applicants: Sunday–Tuesday

Registration of Employers: Monday–Wednesday

Interviews: Tuesday–Thursday

Advance Registrations accepted at Washington office until March 27, 1961. All applicants already registered must notify that office by March 27, 1961 if they wish their records processed and taken to Atlantic City.

Placement Service, 9650 Wisconsin Avenue, Washington 14, D. C.

Free
catalog of high school science-teaching aids

Here is a comprehensive source for tested science materials, geared specifically to teachers' classroom and laboratory needs. 48-page illustrated catalog describes nearly 1000 items of educator-approved equipment and books ranging from astronomy to zoology—with emphasis on enrichment materials suitable for individual and group projects by students. For *free* copy, write to: Dept. M-267

SCIENCE MATERIALS CENTER
A Division of The Library of Science
59 Fourth Avenue, New York 3, N.Y.

Dept. M-267
Science Materials Center
59 Fourth Ave., New York 3, N.Y.

Please send me your 48-page illustrated catalog of high school science teaching aids.

Name_____

Grade_____

Institution_____

Address_____

City_____ Zone____ State_____

ways PICKER NUCLEAR can help you...

to separate steroids and similar organic complexes use this

radiochromatogram scanning system

Picker Nuclear can help you do more accurate radio-paper chromatography to yield quantitative data on the amount of several organic complexes present in a mixture, or for testing the purity of a given material. Two systems are available (1) a continuous scanning arrangement that yields a strip chart recording of radioactivity that you can lay alongside the chromatogram and (2) a stepwise scanning arrangement that gives you a printed record of count and time information corresponding to the radiation measurement of successive areas, each equal to the slit opening.

Both systems can handle 1½" wide *thin* (Whatman #1) or *thick* (Whatman #3) paper in any length. Both systems offer a choice of slit width and may be used with windowless or thin window flow counters, Geiger tubes, or scintillation detectors.

the original chromatogram

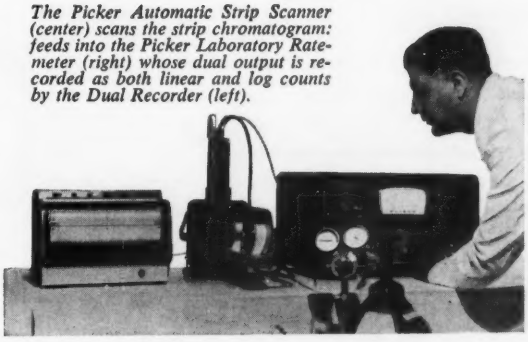
the resultant scanogram

This Chromatogram Scanning System is one of the comprehensive Picker line of nuclear instrumentation and supplies: all marketed and serviced through a national network of company offices staffed by trained Picker people. (Picker alone in the nuclear field offers this caliber of local service).

For details call your district office (see 'phone book) or write Picker X-Ray Corporation, 25 South Broadway, White Plains, New York.

Picker nuclear

The Picker Automatic Strip Scanner (center) scans the strip chromatogram: feeds into the Picker Laboratory Ratemeter (right) whose dual output is recorded as both linear and log counts by the Dual Recorder (left).



LEA & FEBIGER BOOKS

Visit Us At Booth 118, Atlantic City

Noble and Noble—Parasitology

The Biology of Animal Parasites. By ELMER R. NOBLE, Ph.D., Professor of Zoology and Vice Chancellor, University of California, Santa Barbara; and GLENN A. NOBLE, Ph.D., Head, Biological Sciences Dept., California State Polytechnic College, San Luis Obispo. *About 650 pages. 420 illus. New. Ready in April.*

NEW 1961 BOOK. Non-clinical in approach, this up to date text presents animal parasitology as an intriguing field in its own right. Reproduction, growth, evolution, ecology and distribution are taken up fully, as are parasite host relationships.

Boyd—A Textbook of Pathology

By WILLIAM BOYD, M.D., Professor Emeritus of Pathology, The University of Toronto, Canada. *About 1250 pages. 792 illustrations and 19 plates in color. New 7th edition. Just published.*

NEW 1961 EDITION. New emphasis in this splendidly illustrated text is on normal and disturbed physiology in relation to disease processes. There are new chapters on immunity and hypersensitivity, derangement of body fluids and ionizing radiation, and much rewritten material. Reset in double column format.

Finerty and Cowdry—A Textbook of Histology

By JOHN C. FINERTY, Professor of Anatomy, School of Medicine, University of Miami, Coral Gables; and E. V. COWDRY, Emeritus Professor of Anatomy, School of Medicine, Washington University, St. Louis. *573 pages, 7" x 10". 502 illustrations on 374 figures, 18 in color. New 5th edition. $11.00.*

NEW EDITION. Presented here is a complete description of the microscopic anatomy of the human body. The new edition contains two new chapters. All chapters have been revised fully. There are many new photomicrographs, especially of human material, and new electron micrographs.

Wohl and Goodhart—Modern Nutrition in Health and Disease

Edited by MICHAEL G. WOHL, M.D., Chief of Human Nutrition, Hahnemann Medical College and Hospital, Philadelphia; and ROBERT S. GOODHART, M.D., Scientific Director, The National Vitamin Foundation, Inc. 59 CONTRIBUTORS. *1152 pages. 75 illustrations. 155 tables. 2nd edition. $18.50.*

2nd EDITION. This splendid work on dietotherapy abounds with clinical applications of nutrition in health and disease. Nutritional management of specific disease entities and stress situations are discussed fully. Utilizes the physiologic approach

---

LEA & FEBIGER

Washington Square
Philadelphia 6, Pa.

Please enter my order and send me:

☐ **Noble and Noble**—Parasitology.....New
☐ **Boyd**—A Textbook of Pathology.....New Ed.
☐ **Finerty & Cowdry**—A Textbook of Histology.....$11.00
☐ **Wohl and Goodhart**—Modern Nutrition.....18.50

☐ Check enclosed ☐ Bill me at 30 days ☐ Easy pay't plan

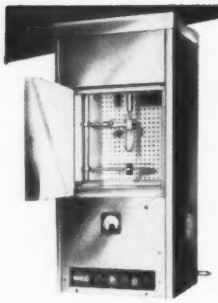
(We pay postage if remittance in full accompanies your order)

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

FP 3-61



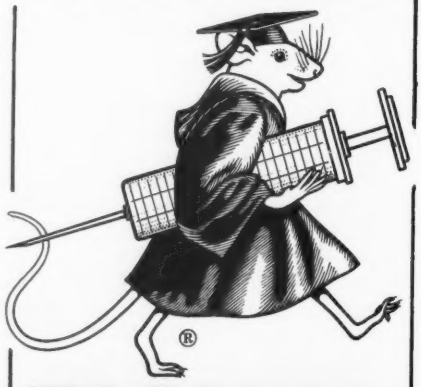
The NEW MSE-60 Watt Ultrasonic Disintegrator

designed to produce and utilize sound energy for the mechanical disintegration of cells and bacteria.

- Cabinet construction as a single unit with acoustically insulated working chamber.
- Built-in thermo-ammeter to give accurate indication of tuning.
- Titanium probes provide greater resistance to corrosion and erosion.
- At 20,000 cycles.
- Volumes from 1 to 50 cc.

INSTRUMENTATION ASSOCIATES INC.
Distributors of Laboratory and Scientific Specialties
17 West 60th Street New York 23, N. Y.

SWISS MICE



TACONIC FARMS

GERMANTOWN NEW YORK

Send for booklet

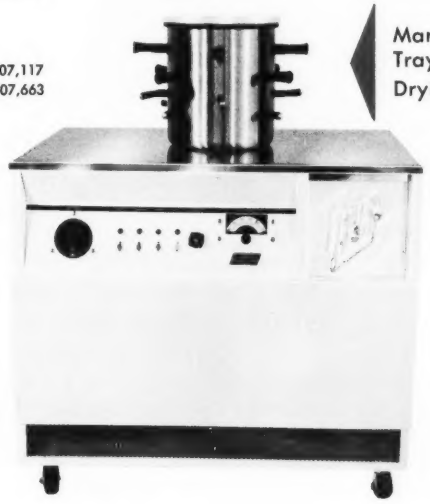
FREEZE-DRYING

AUTOMATIC FREEZE-DRYING FOR THE LABORATORY AND PILOT PLANT

The VirTis Mechanically Refrigerated Freeze-Mobile offers complete freeze-drying facilities for the biological research laboratory or for pilot plant freeze-drying investigations. Four vacuum chambers are now available for use with this instrument. These chambers provide added convenience for routine manifold freeze-drying procedures. And, for the first time, samples can be automatically frozen as well as freeze-dried in the same vacuum chamber.

Patent No. 2,907,117
Patent No. 2,907,663

Manifold
Tray and Centrifugal
Drying Chambers



Freeze-Mobile

Centri-Freeze

Centrifugal freeze-drying yields extremely rapid sample freezing and freeze-drying rates. Materials are placed in the Centri-Freeze unfrozen. When the vacuum is applied, approximately 15% of the water content of each sample rapidly evaporates, causing the remainder of the sample to freeze solidly. Frothing and foaming that would normally occur due to the evolution of gases from each sample is entirely prevented by the application of centrifugal force while materials are "auto-freezing."

FREEZE-DRY ON MANIFOLDS OR ELECTRICALLY HEATED TRAYS

The VirTis Unitrap is an ideal instrument for moderate scale freeze-drying operations. Up to six pounds of water is condensed in this mechanically refrigerated cold trap before defrosting is required. To operate, simply place any of eight different vacuum chambers on the Unitrap table top and connect the condenser to a suitable vacuum pump.

Vacuum chambers are of three types — for manifold drying — for bulk drying — and combination bulk and manifold drying. Electrically heated trays insure efficient drying rates for bulk drying procedures. Temperature thermistor probes and sample temperature controllers are available for precise freeze-drying studies.

Automatic
Cold Trap

Unitrap

Postage
Will Be Paid
by
Addressee

No
Postage Stamp
Necessary
If Mailed in the
United States

BUSINESS REPLY CARD
First Class Permit No. 3, Sec. 131.23, Gardiner, N. Y.

Postage Will be Paid By —

The VirTis Co., Inc.

GARDINER, N. Y.

FREEZE-DRYING

Scientists interested in freeze-drying will find the new VirTis Research Equipment Catalog a valuable source of information on instruments and accessories for virtually every application. Redesigned and entirely new dry ice cooled or mechanically refrigerated freeze-drying systems are described. New accessories include Quickseal freeze-drying flasks and thermistor temperature gauges for continuous monitoring of drying temperatures.

Full details and illustrations are given on VirTis "High-Speed" Tissue Homogenizers plus a variety of instruments of wide applicability in biological research. For your copy, fill out and mail in the post card at the bottom of this page.

All New VirTis Catalog

"45" Homogenizer

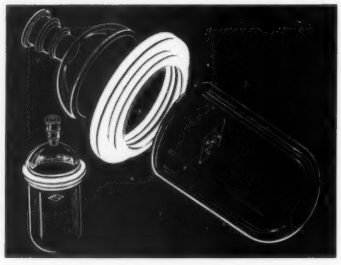
Now a standard in the laboratory, the VirTis "45" provides remarkable efficiency for difficult homogenizing problems. The top speed of 45,000 r.p.m. rapidly reduces samples to a fine particle size. Glass beads and a special chrome plated impeller are available for grinding bacteria. Volumes between 0.2 ml. and 400 ml. are all easily processed in the one instrument.

"23" Homogenizer

A budget priced version of the "45" Homogenizer, the "23" yields excellent results for most routine laboratory procedures. Top speed is 23,000 r.p.m. The VirTis "23" Homogenizer will process volumes between 0.2 ml. and 200 ml.

"45"

Quickseal† FREEZE-DRYING FLASKS



Quickseal Freeze-Drying Flasks maintain the same high vacuum as the standard flasks, which rely on lubricated ground glass surfaces, without any grease at all! Both the bottom and top sections of these flasks have a smoothly beveled edge which slip fits into a double faced silicone rubber gasket.

Quickseal Freeze-Drying Flasks are available in volume capacities from 25 ml. to 1,000 ml. with either 19/38 or 24/40 top joint.

*Patent Pending

VirTis, Technical Service. Please send complete information on the items I have checked below:

(PLEASE PRINT)

Name ..... ☐ Catalog

Title ..... ☐ Freeze-Mobile

Company ..... ☐ Unitrap

Address ..... ☐ Centri-Freeze

City ..... ☐ "45" & "23" Homogenizers

Zone ..... State ..... ☐ Quickseal Flasks

Ready in August! New 11th Edition

MEDICAL PHYSIOLOGY

Edited by PHILIP BARD, Ph.D., Sc.D., Professor of Physiology, School of Medicine, The Johns Hopkins University, Baltimore, Md.

Ready This Month! New 14th Edition

TEXTBOOK OF PHYSIOLOGY

By W. W. TUTTLE, Ph.D., Sc.D., Professor Emeritus of Physiology, College of Medicine, State University of Iowa, Iowa City, Iowa and BYRON A. SCHOTTELIUS, Ph.D., Associate Professor of Physiology, College of Medicine, State University of Iowa, Iowa City, Iowa. Ready later this month. Approx. 575 pages, 6¾″ x 9¾″, 312 illustrations, 5 color plates. Price, $7.00.

Ready in May!

MEDICAL PHARMACOLOGY—PRINCIPLES AND CONCEPTS

By ANDRES GOTH, M.D., Professor of Pharmacology and Chairman of the Department, The University of Texas Southwestern Medical School.

New 8th Edition

PHARMACOLOGY IN NURSING

By ELSIE E. KRUG, R.N., M.A., Instructor in Pharmacology and Anatomy and Physiology, St. Mary's School of Nursing, Rochester, Minn. New, 1960, 8th edition, 805 pages, 6⅛″ x 9¾″, 49 illustrations, 8 color plates. Price, $6.00.

Ready in April! New 12th Edition

PHARMACOLOGY AND ORAL THERAPEUTICS

By EDWARD C. DOBBS, B.S., D.D.S., F.A.C.D., Professor of Pharmacology and Therapeutics, Baltimore College of Dental Surgery, Dental School, University of Maryland, Baltimore, Md. Approx. 575 pages, 32 illustrations.

Ready in June! New 2nd Edition

RELIEF OF SYMPTOMS

By WALTER MODELL, M.D., F.A.C.P., Director of Clinical Pharmacology and Associate Professor of Pharmacology, Cornell University Medical College, New York, N. Y. Approx. 425 pages, 52 illustrations.

New 5th Edition!

SYNOPSIS OF PATHOLOGY

By W. A. D. ANDERSON, M.A., M.D., F.A.C.P., F.C.A.P., Professor of Pathology, University of Miami School of Medicine, Miami, Fla. New, 1960, 5th edition, 876 pages, 4⅞″ x 7⅝″, 414 illustrations, 4 color plates. Price, $9.25.

Visit the Mosby booth at the Convention and learn more about these recently published or soon-to-be-released new books and editions!

Plan Now to See Us in Booths No. 128, 129

The C. V. Mosby Company

3207 Washington Boulevard
St. Louis 3, Missouri

Ready in July! New 4th Edition

PATHOLOGY

By W. A. D. ANDERSON, M.A., M.D., F.A.C.P., F.C.A.P., Professor of Pathology, University of Miami School of Medicine, Miami, Fla. Ready in July. 4th edition, approx. 1450 pages, approx. 1381 illustrations.

2nd Edition

THE MANAGEMENT OF ORAL DISEASES

By JOSEPH L. BERNIER, D.D.S., M.S., F.D.S., R.C.S. (Eng.), Colonel, Dental Corps, United States Army; Chief, Oral Pathology Division, Armed Forces Institute of Pathology. 1959, 2nd edition, 875 pages, 6¾″ x 9¾″, 1031 illustrations, 5 color plates. Price, $15.00.

PATHOLOGIC PHYSIOLOGY OF ORAL DISEASE

By RICHARD W. TIECKE, B.S., D.D.S., M.S., F.A.C.D.; ORION H. STUTEVILLE, B.S., D.D.S., M.D.S., M.D. and JOSEPH C. CALANDRA, M.D., Ph.D. 1959, 480 pages, 6¾″ x 9¾″, 637 illustrations. Price, $11.50.

New 5th Edition

ORAL PATHOLOGY

By KURT H. THOMA, D.M.D., Dr. med. dent. h.c. (Zurich); F.D.S., R.C.S. (Eng.); Hon. F.D.S., R.C.S. (Edin.); F.A.C.D. and HENRY M. GOLDMAN, D.M.D., F.A.C.D. New, 1960, 5th edition, 1523 pages, 6⅞″ x 10″, 1704 illustrations, including 111 in color. Price, $27.50.

5th Edition

HUMAN BIOCHEMISTRY

By ISRAEL S. KLEINER, Ph.D., Professor of Biochemistry and Director of the Department of Biochemistry, New York Medical College, Flower and Fifth Avenue Hospitals and JAMES M. ORTEN, Ph.D., Professor of Physiological Chemistry, Wayne State University College of Medicine, Detroit, Mich. 1958, 5th edition, 808 pages, 6½″ x 9½″, 94 illustrations, 5 color plates. Price, $9.00.

NUTRITION AND DIET THERAPY FOR PRACTICAL NURSES

By LILLIAN MOWRY, B.S., Chief Dietitian, Menorah Medical Center, Kansas City, Mo. 1958, 165 pages, 5½″ x 8½″, illustrated. Price, $2.50.

5th Edition

DIAGNOSTIC BACTERIOLOGY

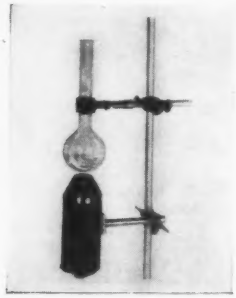
By ISABELLE G. SCHAUB, A.B.; M. KATHLEEN FOLEY, M.A.; ELVYN G. SCOTT, M.T. and W. ROBERT BAILEY, Ph.D. 1958, 5th edition, 338 pages, 5½″ x 8½″, illustrated. Price, $4.75.

TRI-R
VERSATILE LABORATORY INSTRUMENTS

TRI-R *Electronic* THERMOMETER

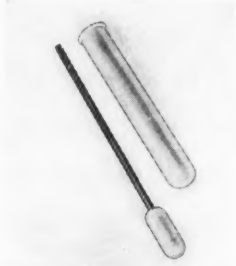
THERMISTOR TYPE

- RAPID — read temperature in seconds
- ACCURATE — ± ½% of scale range
- DIRECT READING — in °C. and °F.
- REMOTE READING — leads to 1000 feet
- LOW COST — priced from $72.00
- PROBES — interchangeable and special human, animal, laboratory use
- RANGES — from —35 to +150°C.
- STABLE — mercury cell battery models regulated line operated models



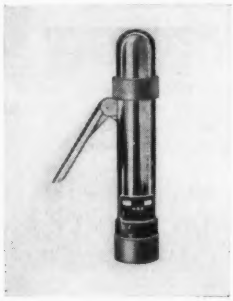
COMPACT MAGNETIC STIRRER

- Stir at Any Angle
- In Open or Closed Vessels
- Under Vacuum or Pressure
- With or without Hotplate



TEFLON TISSUE HOMOGENIZERS

- Interchangeable Teflon Pestles
- Precision Bore Pyrex Glass Tubes
- Notched for Quick Change Chuck
- Complete Apparatus Available



AUTOMATIC EGG-PUNCH

- For Opening Embryonated Eggs
- Open 60 Eggs Per Minute
- Clean 1" Circular Fracture
- One Hand Efficient Operation

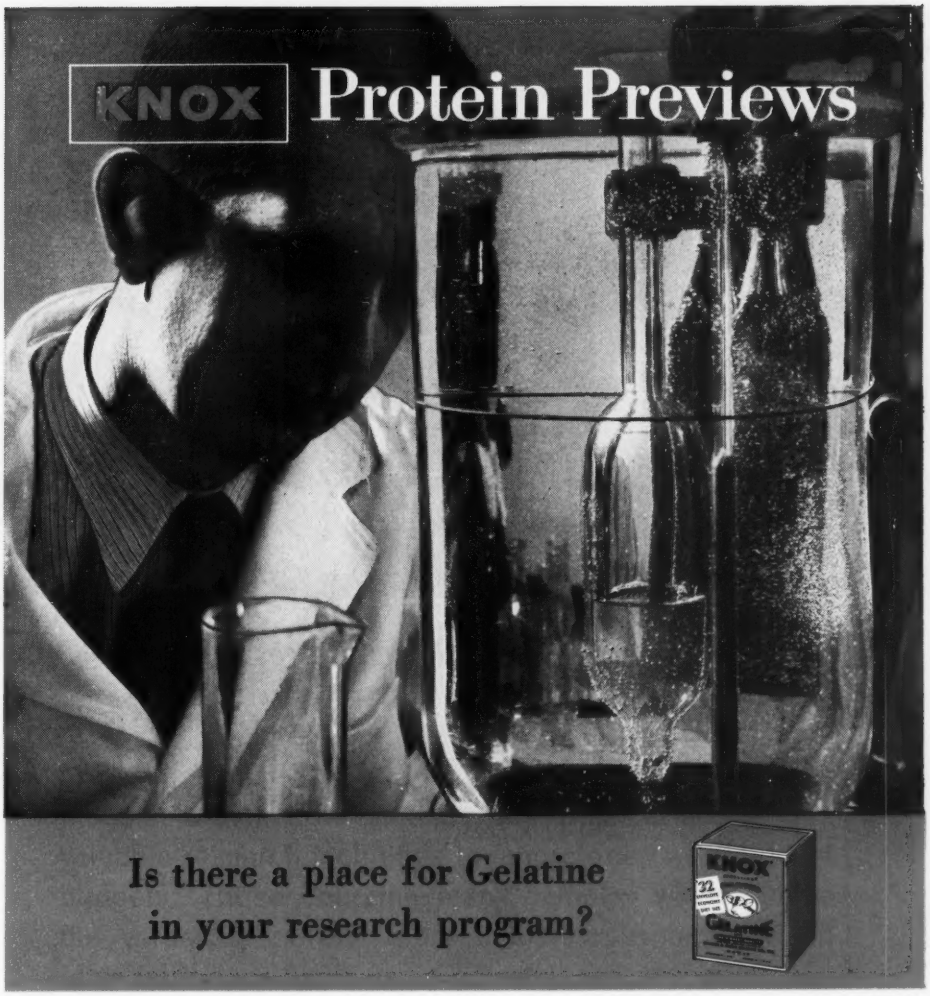
VISIT OUR BOOTH #189 AT THE FEDERATION CONVENTION

Write for individual bulletins or complete catalog to Dept. F-31

TRI-R INSTRUMENTS

Developers of Electronic and Mechanical Instruments for Scientific Research

144-13 JAMAICA AVENUE, JAMAICA 35, N. Y.



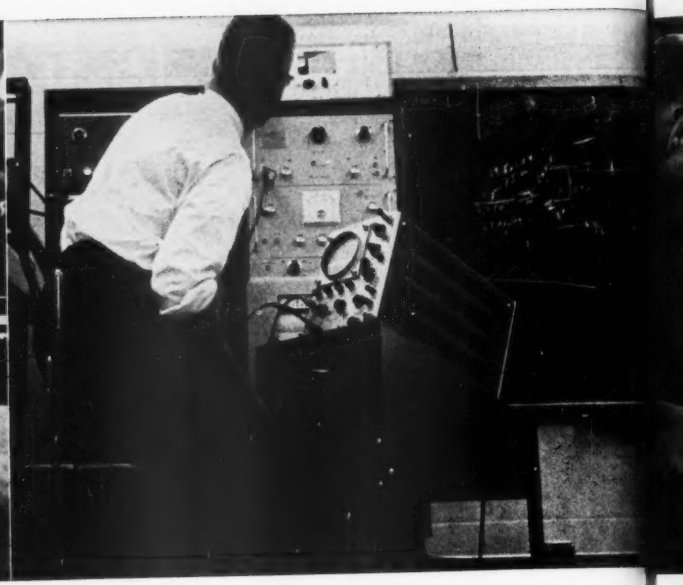
The sciences, embracing the fields of physics, chemistry, biophysics, bacteriology, physiology, medicine and nutrition, have relied upon the many unique properties of gelatine for advancing knowledge in innumerable ways. In fact, many basic concepts in these fields have been established by the systematic application of gelatine.

For many years, the Knox Gelatine Company has tried through improved technology to make characterization data and experimental materials available to research workers for advancing scientific knowledge, whether directly or remotely related to the use of gelatine.

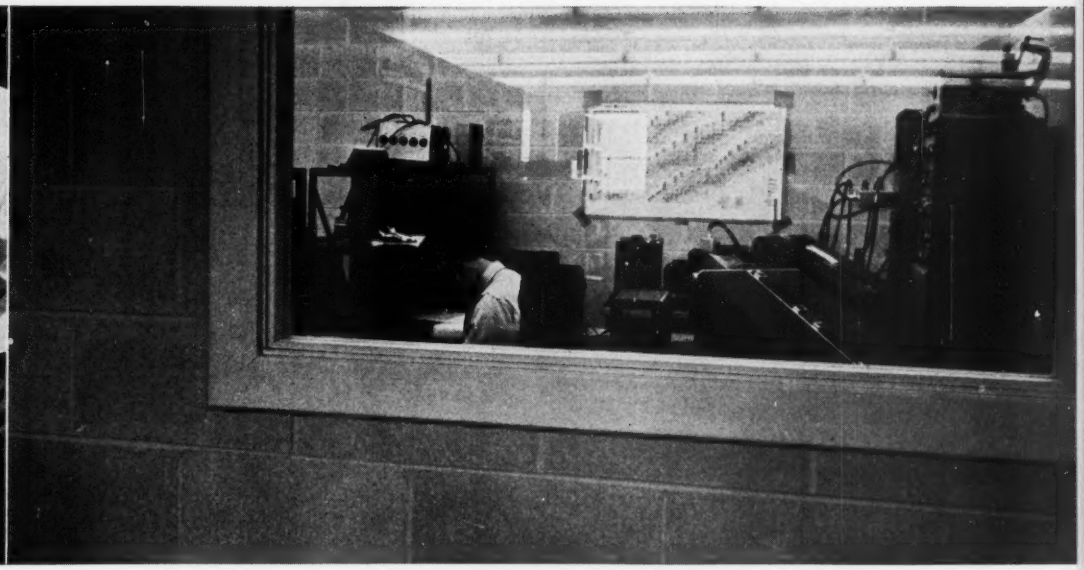
This cooperation has developed much new information and expanded uses for gelatine in the fields of medicine, nutrition, photosensitive materials including X-ray and color photography, medical vehicles and encapsulating materials. Gelatine has pioneered, as well, the field of plasma volume expanders with new materials recognized especially for safety and effectiveness.

As research has advanced knowledge of gelatine protein, Knox Gelatine has kept pace in quality. In gelatines, there is no acceptable substitute for Knox. Your inquiries are invited. Director of Technical Service, Knox Gelatine Co., Inc., Camden, New Jersey.

PRESET TIME
ELAPSED TIME
SCALER CONTROLLED
OPERATION
ON
MASTER
COUNT
STOP
t 5 4 3.8

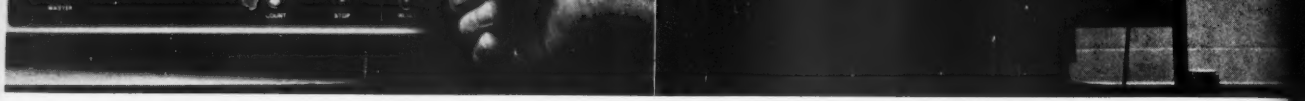


The climate of research



On Monday, April 10, our new liquid scintillation counting systems will be introduced at the Federation's meeting in Atlantic City. Cost-conscious participants in the meeting will appreciate the simplest of our models which now extends the application of this valuable research technique to laboratories with modest budgets. Those counting many samples will welcome the versatility of our more complete systems which offer important bonuses in convenience and automatic operation. Everyone will be pleased by the space savings offered by the compact design and functional elegance of these integrated, reliable, sensitive systems. Over the years the climate of research at Nuclear-Chicago has fostered ever-widening applications of radioisotope techniques for the biological sciences. Our new systems for liquid scintillation counting help support that tradition. We invite your critical scrutiny at booth 95 at the FASEB meeting in Atlantic City, April 10-14. If you do not plan to attend the meeting, please write for detailed specifications and application data.

nuclear-chicago
CORPORATION
335 EAST HOWARD AVE., DES PLAINES, ILL.



XUM

a WINNING TEAM...
for the
Life Scientist
LABORATORY STIMULATOR

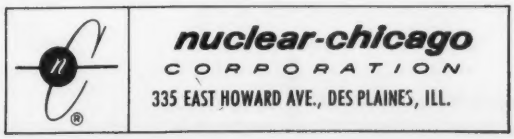
JOSEPH E

ALBINO MICE

CROSS BETWEEN WEBSTER AND SWISS STRAINS RANDOM BREEDING

THIS IS A VERY DOCILE MOUSE

On Monday, April 10, our new liquid scintillation counting systems will be introduced at the Federation's meeting in Atlantic City. Cost-conscious participants in the meeting will appreciate the simplest of our models which now extends the application of this valuable research technique to laboratories with modest budgets. Those counting many samples will welcome the versatility of our more complete systems which offer important bonuses in convenience and automatic operation. Everyone will be pleased by the space savings offered by the compact design and functional elegance of these integrated, reliable, sensitive systems. Over the years the climate of research at Nuclear-Chicago has fostered ever-widening applications of radioisotope techniques for the biological sciences. Our new systems for liquid scintillation counting help support that tradition. We invite your critical scrutiny at booth 95 at the FASEB meeting in Atlantic City, April 10-14. If you do not plan to attend the meeting, please write for detailed specifications and application data.



XUM

ANIMATIC INTRODUCES A NEW CAGING SYSTEM

This new, lightweight, highly mobile system consists of 50 standard cages in 5 removable tiers of 10 cages suspended on a portable rack. The rack measures 24″ × 47″ × 69″, is sturdy yet mobile. Individual tiers or single cages as shown below can easily be removed, without disturbing others, for laboratory table use and convenient placing in an autoclave or washer. Each tier of 10 cages is self supportable on or off the portable rack. Note below the simplicity of the cage support and closure system which eliminates the need for doors or lids.

WITH ALL THESE PLUS FEATURES
AT NO ADDITIONAL COST!

a WINNING TEAM...
for the
Life Scientist

LABORATORY STIMULATOR

MODEL 104-A

A precision instrument designed and built for versatility.

- Direct reading & resetable to 0.1%
- Single, pairs or trains of stimuli
- Output 250 volts at 25 watts
- Stimulus duration 10 microseconds to 1 second
- Repetition rate 1/10 cycle to 10,000 cycles per second
- Delay 100 microseconds to 10 seconds

THESE TWO PIECES OF EQUIPMENT WERE MADE FOR EACH OTHER. THIS TEAM, WORKING IN UNISON, WILL HELP RESOLVE YOUR MOST DIFFICULT PROBLEM

The 251-A is the perfect companion piece for the 104-A

DIRECT COUPLED WIDE BAND AMPLIFIER

MODEL 251-A

A unique amplifier designed specifically for work in biology, neurology, pharmacology and related areas of biophysical research.

- Direct coupled throughout or selectable time constants
- Variable bandwidth
- Low drift
- In phase signal rejection 50,000:1
- Input impedance 100 megohms
- Gain 100,000; 100 microvolt input for 10 volt output

More data on request

Investigate the opportunities at AEL for creative engineers

AEL

AMERICAN ELECTRONIC LABORATORIES, INCORPORATED

121 N. 7th St.
Phila. 6, Penna.

JOSEPH E STOCKER

ALBINO MICE

CROSS BETWEEN WEBSTER
AND SWISS STRAINS
RANDOM BREEDING

THIS IS A VERY
DOCILE MOUSE

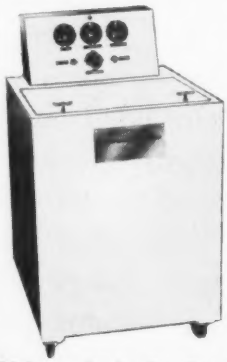
ALSO HAVE RATS
GUINEA PIGS
RABBITS

all mice raised by me
are raised in
plastic pens

PHONE DAVIS 7–1064

Box 44 Ramsey, N. J.

REDESIGNED LABORATORY GLASSWARE WASHER INTRODUCED BY INDUSTRIAL



Featuring the clean, attractive look of a modern home appliance, plus even greater compactness, a newly improved small-space laboratory glassware washer has been announced by Industrial Systems Company, exclusive sales representatives for Industrial Washing Machine Corporation.

Designated as model GW 16, the newer, more powerful washer offers laboratories completely automatic cleansing and sanitizing of test tubes, flasks, Petri dishes, Blake bottles and other laboratory glassware. The washer's operation is fast, efficient, dependable and trouble-free. It also provides substantial time and labor savings and constantly maintains high standards of performance under all conditions. Furthermore, the washer installs simply and quickly and is equipped with casters for easy inter-laboratory portability.

Fully detailed information about this newest model in the highly regarded ISC line of automatic washing machines for laboratories and other critical uses is promptly available upon request to Industrial Systems Company, Matawan, New Jersey.

ISC INDUSTRIAL Systems COMPANY

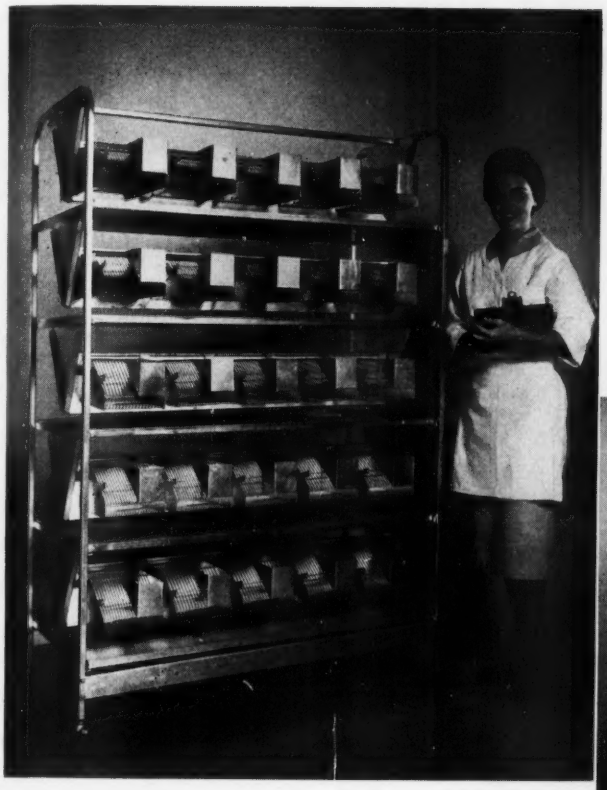
EXCLUSIVE SALES AGENTS FOR:
INDUSTRIAL WASHING MACHINE CORP., MATAWAN, N. J.

MANUFACTURERS OF
LABORATORY GLASS WASHERS

CAGE WASHERS

CAGE RACK WASHERS
ATMOSPHERIC STEAM STERILIZERS

ANIMATIC INTRODUCES A NEW CAGING SYSTEM



This new, lightweight, highly mobile system consists of 50 standard cages in 5 removable tiers of 10 cages suspended on a portable rack. The rack measures 24″ × 47″ × 69″, is sturdy yet mobile. Individual tiers or single cages as shown below can easily be removed, without disturbing others, for laboratory table use and convenient placing in an autoclave or washer. Each tier of 10 cages is self supportable on or off the portable rack. Note below the simplicity of the cage support and closure system which eliminates the need for doors or lids.

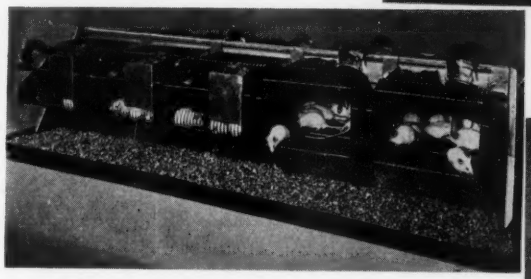
WITH ALL THESE PLUS FEATURES AT NO ADDITIONAL COST!

- All external feeding, watering and labeling.
- Virtually, vermin and dirt free construction.
- Removable excreta pans.
- Entirely portable for easy storage.
- Built-in water bottle holder, and labeling service.
- Interchangeable parts.
- Reduced labor cost proven through actual use and time and motion studies.
- Rack is adaptable to metabolism funnel cages.
- No doors, latches or hangers on standard cage to require repair.

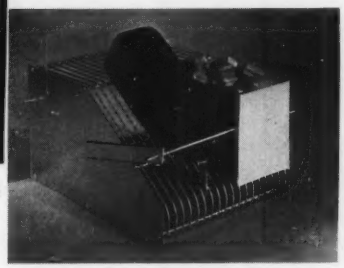
STAINLESS STEEL.....$1,150.00*
HOT DIP GALVANIZE.....$545.00*
*Current prices, F.O.B. New Orleans, La.

IMMEDIATE DELIVERY!

The lack of a back closure when the cage has been removed from its rack or placed in the reversed position causes no difficulties from the standpoint of animals escaping while being used.



Fully autoclavable and easy one-hand handling. Designed by scientist active in research and proven by extensive laboratory and hospital use.



Other Type Cages Available for Larger Animals. Further Information and Prices on Request

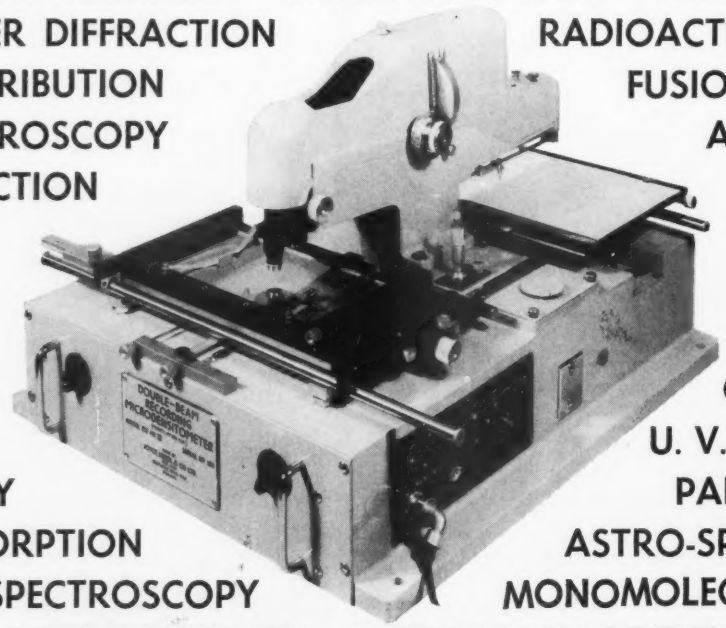
SEE US IN BOOTH 222.

ANIMATIC Animal Care Products, Inc.

P.O. Box 4228 *New Orleans, La.* *UNiversity 6-3387*

The Very Finest Instruments

EMISSION SPECTROSCOPY · INTERFEROMETRY · LUNAR MAPPIN
X-RAY POWDER DIFFRACTION — RADIOACTIVITY STUDIE
PARTICLE DISTRIBUTION — FUSION REACTION
RAMAN SPECTROSCOPY — ASTROPHYSIC
X-RAY DIFFRACTION — SPECTROHE
PHYSIOLOGY — LIOGRAPHY
DOSIMETRY — CHECKING
CYTOLOGY — OF OPTICAL
ELECTRON- — COMPONENT
MICROSCOPY — U. V. ABSORPTIO
RADIOTHERAPY — PARTICLE SIZIN
VACUUM ABSORPTION — ASTRO-SPECTROSCOP
GAMMA-RAY SPECTROSCOPY — MONOMOLECULAR LAYER
MINERALOGICAL SPECTROSCOPY · MICROSCOPY OF THREADS & FIBER
X-RAY SINGLE CRYSTAL DIFFRACTION · INTERFERENCE MICROSCOP



JOYCE–LOEBL DOUBLE-BEAM AUTOMATIC RECORDING MICRODENSITOMETER

unique among the world's densitometers for . . .

- √ Relative & Absolute Density Measurements
- √ Direct High-Speed Recording
- √ Independence of Daylight
- √ Ease of Maintenance
- √ Direct Record & Specimen Linkage
- √ View of Specimen During Scanning
- √ Interchangeable Optics
- √ Calibrated Controls
- √ Guaranteed Service

Wide Range of Accessories Includes Polar Table, Automatic Integrator, Fine Focus Control and Fine Control of Specime

INSTALLATION AND INSTRUCTION INCLUDED IN PRICE—INQUIRIES ON SPECIAL APPLICATION INVITED

A FEW USERS OF THE J.L.C. MICRODENSITOMETER

ROCKFELLER INST. FOR MED. RESEARCH
E. I. DUPONT DE NEMOURS & CO.
CALIFORNIA INST. OF TECHNOLOGY
MASSACHUSETTS GENERAL HOSPITAL
MASSACHUSETTS INST. OF TECHNOLOGY
JOHNS HOPKINS UNIVERSITY
DARTMOUTH MEDICAL SCHOOL

CARNEGIE INST. OF WASH.
HARVARD UNIVERSITY
MIDWEST RESEARCH INST.
MONSANTO CHEMICAL CO.
UNIVERSITY OF CALIF.
UNIVERSITY OF PENNSYLVANIA
INST. FOR MUSCLE DISEASE

AMERICAN VISCOSE CORP.
ATLANTIC REFINING CO.
COLUMBIA UNIVERSITY
STANFORD UNIVERSITY
NAT'L. BUREAU OF STANDARDS
UNIVERSITY OF ILLINOIS
U. S. ARMY SIGNAL CORPS

WRITE FOR BULLETIN 54/8B

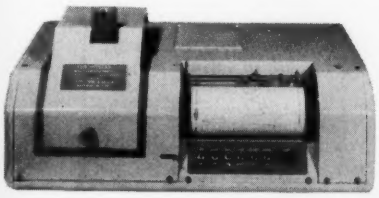
...From All Over The World!

CHROMOSCAN

A new double-beam scanning and recording integrator for chromatography and electrophoresis on agar gel, membrane foil, paper and film

- 9-fold magnification of narrow bands
- Multiple slit width and shapes provided
- Filter turret for monochromatic evaluations
- Sample can be viewed during scanning

BULLETIN 60/2



MICRO IMMUNO

ELECTROPHORESIS ON AGAR

THE APPARATUS

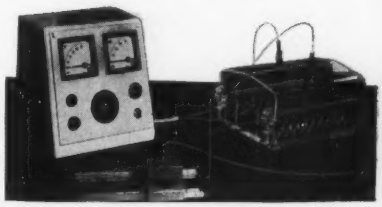
- Designed for use with standard microscope slides.
- Eight patterns obtained in a single run with one cell, 24 with three cells on same power supply.
- Only commercially produced micro and immunoelectrophoresis apparatus complete with cell, power supply, agar cutter, humidifying units, viewer, projector, and Microfix pattern holders.

BULLETIN 257

AGAFOR

- Complete electrophoretic separations in 45 minutes.
- Average sample size 0.001 ml, resulting in sharpest zones with minimum diffusion.
- Immunological reactions observable immediately following electrophoresis.
- Pattern may be inspected and photographed throughout processing.

BULLETIN 257



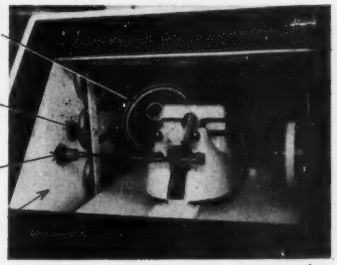
TRANSTAB

HIGH STABILITY TRANSISTORIZED POWER SUPPLY

for replacement of obsolete and space-wasting batteries and trickle-chargers in spectrophotometers

- Output voltage—6 V and 2 V
- Output current—4.2 A, 400 mA
- D.C. output resistance—less than 0.01 Ohm
- In/Output stability—5000:1
- Unique heat-sink permits continuous operation
- No maintenance or parts replacements
- Other voltage and current ratings available

BULLETIN 258



From fresh tissue to mounted stained sections in 3 minutes.

FEATURES

- Cuts sections down to 1 micron.
- Serial sections cut at 3 microns.
- Entirely remotely controlled.
- Thermostatic control between —5° C. and —30° C.
- For ultra-thin sections and friable tissues knife, blade cooled to —50° C.
- Cuts freely at all temperatures; will not rust.
- Instant availability for rapid biopsies.
- Low initial cost and minimum operating attention.

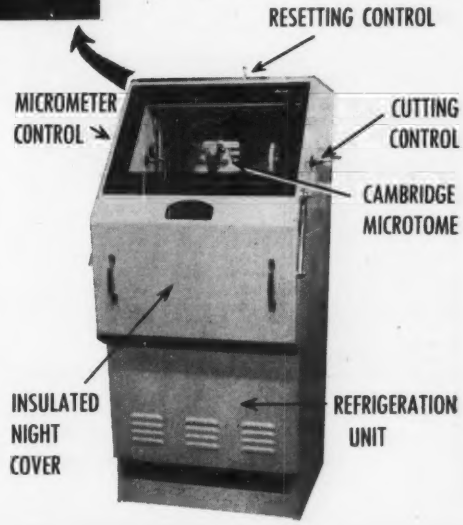
BULLETIN 259

CRYOSTAT

THE PEARSE COLD MICROTOME

The Only Refrigerated Microtome With All External Controls

Now assembled and serviced by N.I.L. for distribution in the U.S.A. and Canada.



NATIONAL INSTRUMENT LABORATORIES, INC.

Exclusive U. S. Sales & Service Agency
828 EVARTS STREET, N.E.
WASH. D. C.—PHONE NO 7-7582

Booths 163 & 164, Federation Convention

REINHOLD TEXTBOOKS

A modern text for undergraduate courses in cell or general physiology...

CELL FUNCTION

An Introduction to the Physiology of the Cell and Its Role in the Intact Organism

by L. L. LANGLEY
Professor of Physiology, University of Alabama
Illustrated by FRANCES LANGLEY

Here is an introductory textbook which presents basic principles of cell physiology at the undergraduate level. It is a text for the first course in cell or general physiology. Dr. Langley provides the student with a carefully developed insight into the function of cells and the role cells play in the intact organism. The book is a well-balanced introduction for students who expect to take additional physiology courses as well as for those who will not pursue this subject in advanced work.

Clearly written and superbly illustrated, *Cell Function* begins with a discussion of the functional anatomy of the cell. The second, and major, section is devoted to a full treatment of basic intracellular activities. Next, there is a brief survey of organ-system physiology, which permits the student to understand the role of cells in the intact organism. The book concludes with a section containing chapters on statistics, molecular activity, electricity, and methodology. These chapters provide the background principles which the student should understand as an orientation to the study of cell physiology. If the information contained in this section is already a part of the student's knowledge, it will serve as a valuable review.

Each chapter concludes with a summary, problems, and a list of suggested readings. More than 120 original drawings were prepared for this book. A full-color plate of blood cells appears as the frontispiece.

CHAPTER HEADINGS

PART ONE: Functional Anatomy of the Cell
1—Organization; 2—Protoplasm; 3—The Cell Membrane.
PART TWO: Intracellular Activities
4—Metabolism: Basic Principles; 5—Metabolism: Basic Reactions; 6—Movement; 7—Electrical Activity; 8—Reproduction, Growth, Aging; 9—Effects of Radiation.
PART THREE: Integration of the Cell in the Total Organism
10—Tissues; 11—The Nervous System; 12—The Circulatory System; 13—The Respiratory System; 14—The Urinary System; 15—The Endocrine System.
PART FOUR: Basic Background Principles
16—Data; 17—Molecular Activity; 18—Electricity; 19—Methodology.

April 1961, approx. 400 pages, 6"x9", 124 illustrations, $7.50
A new text in the series
REINHOLD BOOKS IN THE BIOLOGICAL SCIENCES

REINHOLD COLLEGE TEXTBOOK DEPARTMENT
430 Park Avenue, New York 22, New York

Federation Placement Service

To meet the needs of employers and of individuals seeking positions in the fields of the Federated Societies, the Placement Service maintains the following activities:

1. Listing positions and fellowships
2. Listing applications for positions from qualified individuals
3. Publishing *quarterly* lists of applicants in February, May, August and November, *semiannual* lists of available positions in March and September and a list of fellowships and assistantships in October
4. Providing registration and interview services at the annual meeting

The Executive Committee has authorized the following scale of charges:

Annual applicant registration fee	$ 3.00
Annual subscription to all lists of the Service	20.00
Single copy of a list of candidates	10.00
Single copy of a list of available positions	5.00
Single copy of a list of fellowships	2.00

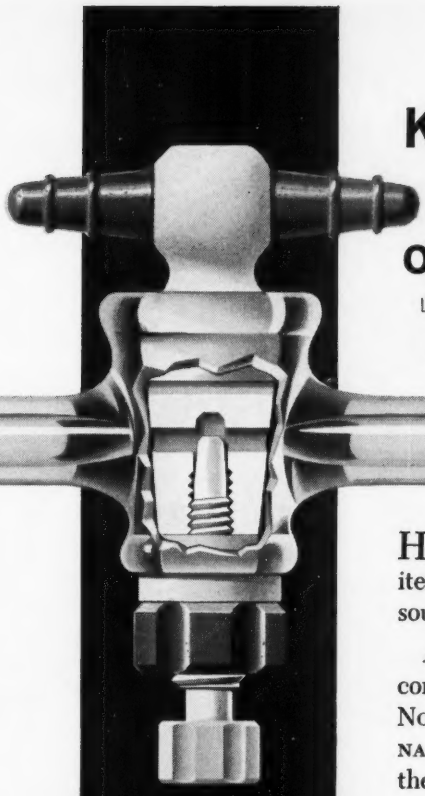
A copy of the fellowship list will be sent without cost to any member of a constituent Society on written request.

Information for the lists must reach the Washington office by the first day of the month of publication.

To obtain registration cards or enter subscriptions, address:

FEDERATION PLACEMENT SERVICE
9650 Wisconsin Avenue
Washington 14, D. C.

Kimble offers the most complete line of glassware with TEFLON® stopcock plugs



41002F VARI-FLO Stopcock, Straight Bore, Teflon Plug with Metering Valve. The metering valve provides fine control of the rate of flow. In 2 mm or 4 mm sizes.

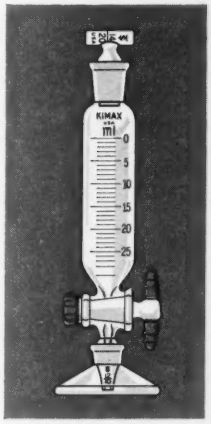
HERE ARE SOME of the 189 Teflon Stopcock-equipped items available from Kimble . . . the most complete source for laboratory equipment of this kind.

All 189 items have these stopcock advantages in common—NO BINDING or FREEZING; NO LEAKING; NO GREASE, thus NO CONTAMINATION; NO MAINTENANCE. And, control is easy and dependable once the initial adjustment is made.

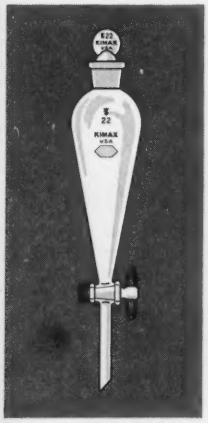
You'll find these and many more Teflon-equipped items in the new Catalog Supplement SP-64. A FREE copy is yours for the asking. Write Kimble Glass Company, subsidiary of Owens-Illinois, Dept. VF-12 (CEN), Toledo 1, Ohio.

TEFLON is a registered trade mark of E. I. Du Pont and Company, Inc. Teflon stopcock plugs are manufactured under FISCHER & PORTER Patent No. 2,876,985.

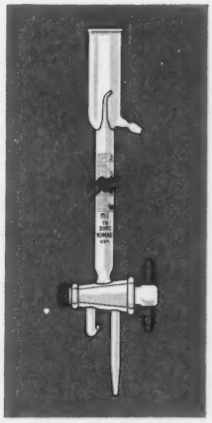
MORE EXAMPLES OF THE EXPANDING KIMBLE LINE



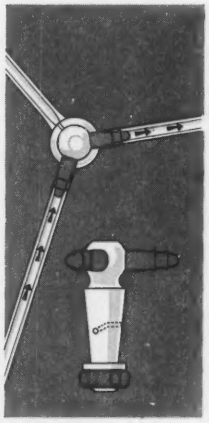
17200F 30 ml Buret, Weighing, LUBRI-FLO Stopcock with Teflon Plug. Also available in 10 ml capacity.



29048F 250 ml Funnel, Separatory, Squibb's Pear-shaped, LUBRI-FLO Stopcock with Teflon Plug. Available in 7 sizes, including the new 30 ml and 2000 ml capacities.



17051F 50 ml Buret, Automatic, Three-Way LUBRI-FLO Stopcock with Teflon Plug. In 25, 50, and 100 ml sizes and a completely new 10 ml size.



41055F LUBRI-FLO Stopcock, 120° Bore, 2 mm, with Teflon Plug. Plug handles designed to coincide with direction of flow.

KIMBLE LABORATORY GLASSWARE

AN (O) PRODUCT

OWENS-ILLINOIS

GENERAL OFFICES • TOLEDO 1, OHIO

NEW STANDARD OF QUALITY

IN A PRIZE WINNING PACKAGE*

ESCO SELECTED MICROSCOPE SLIDES

GUARANTEED† PRE-CLEANED

*National Paper Box Manufacturers award for "BEST END USE PERFORMANCE"

Erie Scientific's 25 years experience in the manufacture of microscope slides, combined with recent technological improvements and rigid quality control, has resulted in a product of superior quality and unimpeachable cleanliness.

TIME SAVING! MONEY SAVING!

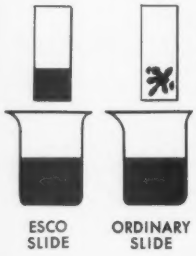
Technicians enjoy the convenience and speed of using Esco PRE-CLEANED slides just as they come from the box . . . eliminating the tedious cleaning or advance preparation required for inferior grades. Most find it saves time and money never to wash used slides, but to use fresh Esco slides every time.

ADDITIONAL QUALITY FEATURES

- Cellophane-wrapped hinged-top dispensing box with lint-free lining.
- Made from finest American sheet glass.
- Thin, flat, highly resistant to corrosion or fogging.
- Annealed to minimize chipping and breakage.
- Individually selected to eliminate imperfections.
- Precision ground edges for accurate uniformity.

For further information on ESCO SLIDES and COVER GLASSES, write for Brochure #11.

SEE THIS CONVINCING TEST



An ESCO pre-cleaned slide dipped in water will consistently show an EVEN film on both sides. Other slides often show a film which breaks into droplets, rendering them unsuitable for use, without costly time-consuming cleaning.

This test, performed during routine inspection by our quality control department, assures that Esco slides are free from oily film.

†*Satisfaction guaranteed or merchandise replaced.*

ERIE SCIENTIFIC • BUFFALO 10, NEW YORK

never before possible!

THIN LAYER CHROMATOGRAPHY

introducing the new "TL" method after Stahl

A major innovation in Adsorption Chromatography.

"TL" is the abbreviation for the Thin Layer of adsorbent (specially prepared Silica Gel G) which constitutes the "open micro column" (250 μ thickness).

With "TL" rapid chromatographic separation on a MICRO scale of many compounds, especially LIPIDS, barbiturates, alkaloids, stereoids, and others is now feasible. Preparation for a test is fast and simple. Required sample volume is from 1 to 10 mm^3 quantities from 0.1 to 500 gamma. Evaluation is by radioactive tracing methods or staining by spray reagents. The latter can be highly aggressive—permitting the use of reagents not suited to other methods of chromatography.

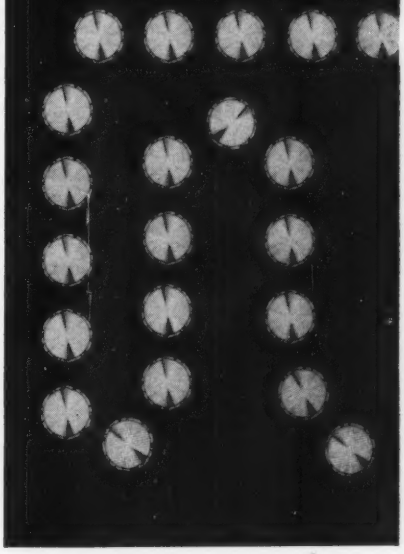
Major applications for "TL" are in

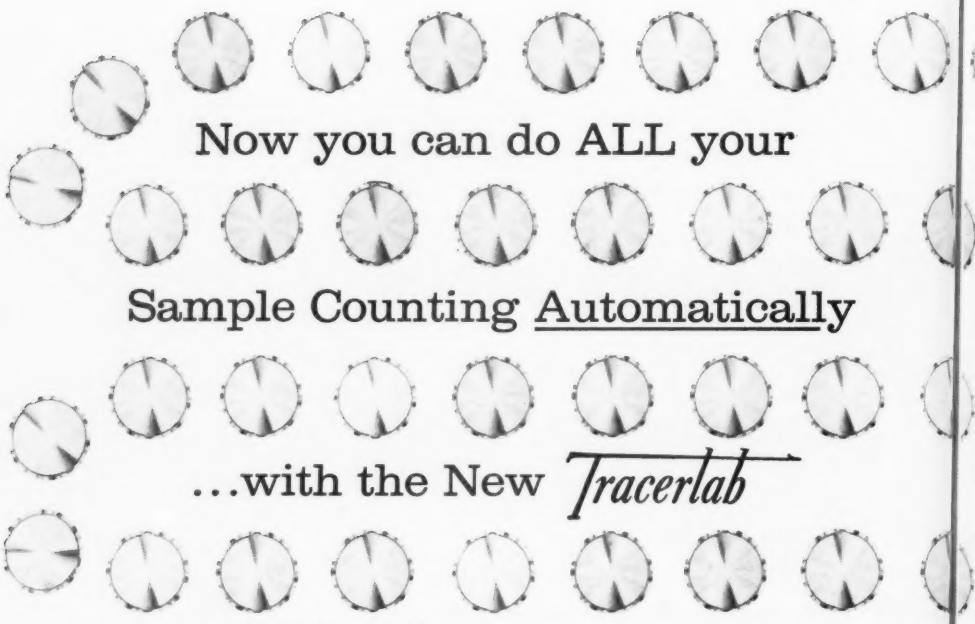
Pharmacy
Toxicology
Biochemistry
Clinical Chemistry
Organic (fat) Chemistry

For full information, bibliography, and prices request bulletin "TL".

BRINKMANN
INSTRUMENTS, INC.
115 Cutter Mill Road, Great Neck, N.Y.
Philadelphia • Cleveland • Houston • Miami • Menlo Park, Cal.

Turn this page and step into the future of Automatic Sample Counting . . .





Fifty sample capacity . . . any size up to two inch . . . any type of detector (Scintillation, Flow Counters, GM Tube) . . . simple one-knob operation . . . these exclusive advantages plus low initial cost and low operating costs . . . are all yours in the outstanding new Tracerlab MULTI/MATIC Sample Counting System.

Only from Tracerlab — the world's largest and *first* manufacturer of Sample Changers could you expect — and get — such a revolutionary new system.

The New SC-100 MULTI/MATIC Sample Changer provides positive, accurate positioning of samples. Samples are readily accessible because they are loaded and driven on a horizontal plane (in contrast to tower or stack types). Automatic recycling of a single sample, automatic by-pass of empty sample positions, automatic recycling to the starting position plus the ability to operate with all types of detectors are other features of this most versatile new Tracerlab development.

The New Tracerlab FD-1 and FD-2 Flow Counters feature the ultra-thin Tracerlab Mono/mol window (less than 125$\mu g/cm^2$). These low cost units, available in 1″ or 2″ window diameters plug in to a common shield and feature low background . . . excellent plateau characteristics . . . very low gas consumption and will operate with a wide variety of counting gases including helium-isobutane, argon-methane, methane or natural gas.

The New Tracerlab SH-1 Shield operates with either the automatic changer or the SC-101 Manual Changer pictured. It accommodates both the 1″ and 2″ FD Series Flow Counters, windowless flow counters, P-20D Scintillation Detectors or standard GM detectors. Convenient handles make it easy to insert or remove from any changer, shield thickness of 2 inches of lead provides low reproducible backgrounds.

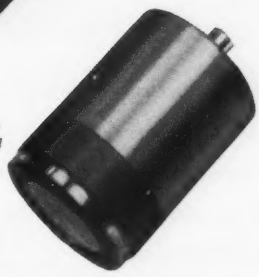
The Tracerlab MULTI/MATIC Sample Counting System when combined with other Tracer/matic components . . . scalers, time and count printers, or time, count and CPM printers . . . provides more specific sample information than any other system.

For complete specifications on the new low cost, economical-to-operate Tracerlab MULTI/MATIC Sample Changer write for Bulletin M.

Tracerlab

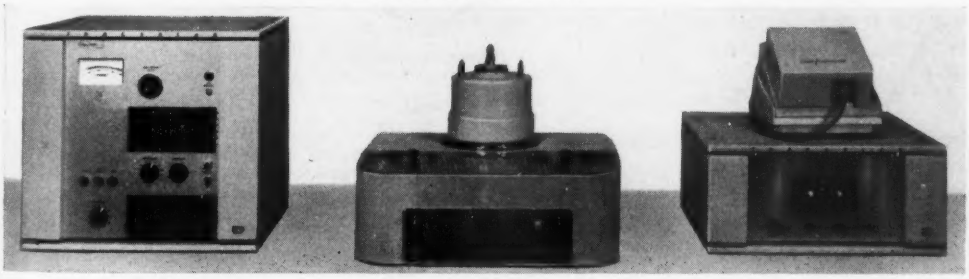
1601 Trapelo Road, Waltham 54, Massachusetts
2030 Wright Avenue, Richmond 3, California

The SC-101 Manual Flow Counter with ultra-thin Mono/mol Window Detector.



New FD Series Flow Counter with the ultra-thin Mono/mol Window features plug-in assembly.

The New Tracerlab MULTI/MATIC Sample Changer combined with the Tracerlab Compu/Matic Scaler and Auto/Computer provides more useful, recorded data than any other system on the market.



Automatic Protein and/or Peptide Analyses

(Either Individual Samples or Column Effluent)

Quantitate...

Total Nitrogen by Kjeldahl

Total Protein by Biuret

Total Protein by Folin–Ciocalteau (Lowry modification)

Amino Groups by Ninhydrin

Tyrosine by Folin–Ciocalteau

Histidine by Pauly Diazo Reaction

Arginine by Sakaguchi

Glutamic Acid by Decarboxylase

Lysine by Decarboxylase

Albumin by HABA Dye [2-(4' hydroxyazobenzene) benzoic acid]

Analyze...

Biological Fluids directly

Effluent from DEAE or Resin Chromatographic Column

Effluent from Poraeth Electrophoretic Column

Electrophoretic Starch Block Fractions

Electrophoretic Paper Chromatogram Segments

Check point stages in Protein Fractionation

Counter Current Distributions

with the TECHNICON®

AutoAnalyzer®

Any or all of these determinations may be run on the same AutoAnalyzer: Takes only two minutes to change from one type of analysis to another. Any combination may be run simultaneously from the same sample by adding additional standard AutoAnalyzer modules. The response time is such that most of the analyses may be run at 40 samples per hour.

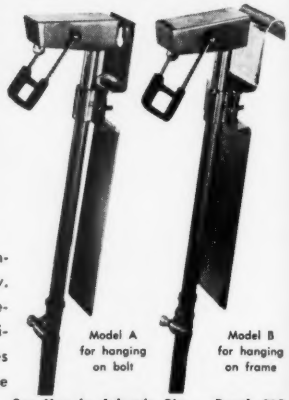
for information, select area of interest and write to

TECHNICON CHROMATOGRAPHY CORP.
72 RESEARCH PARK • CHAUNCEY, NEW YORK

SAVE STEPS... TIME... MONEY...

Take water to working area for rapid-filling with this new

WATERING GUN!



Operates on pressures a hose will handle—simple adjustment regulates flow. Each bottle is taken off the cage, refilled and replaced quickly and efficiently. Prevents exchange of bottles between cages, eliminating one source of contamination.

See You in Atlantic City — Booth 212

WRITE FOR BROCHURE AND PRICES NOW!

CAMM RESEARCH INSTITUTE, INC.

HEMLOCK HOLLOW FARM

414 BLACK OAK RIDGE ROAD
WAYNE, NEW JERSEY
OX 4-0703

THE ERWEKA METHOD

(14 INTERCHANGEABLE UNITS)

3-ROLLER MILL

HOMOGENIZER

MOTOR DRIVE UNIT

and

- BALL MILL
- WET GRANULATOR
- DRY GRANULATOR
- MIXER & KNEADER
- GRINDER
- AGITATOR
- FLUID EXTRACTOR
- BOTTLE SHAKER
- VIBRATOR
- COATING PAN
- TABLET PRESS
- MOLDER & FILLER

Each of these laboratory units can be interchangeably fitted to the variable speed motor drive in a quick and simple step.

WRITE TODAY *for free catalog describing operation of each unit with specifications and capacities. Also inquire about other low-priced equipment for research and teaching such as tablet testing apparatus, etc.*

CHEMICAL AND PHARMACEUTICAL INDUSTRY CO., INC.
90 West Broadway, N. Y. 7, N. Y. BEekman 3-1730

NEW SCREW CAP VOLUMETRIC FLASK

SEALS TIGHT! WON'T FREEZE! COSTS LESS!

The Bakelite* screw cap on this new volumetric flask *holds* tight, can't pop off. Its conical polyethylene liner hugs the flask neck, seals it tight, won't leak a drop. Alkalies can't freeze it.

If you upset the flask, the cap takes much of the shock. In storage, the cap keeps dust and dirt off the flask lip.

No. 5650 flask with cap closure costs from 40 cents to $1.00 less than similar types with glass stoppers.

The 25 and 50 ml sizes fill quicker and easier because of their funnel necks which also serve as mixing chambers. Six other sizes too: 100 thru 2000 ml. All are Class A accuracy. All are made of PYREX® brand glass to shrug off chemical attack, mechanical shock.

There are 16 other PYREX brand volumetric flasks for your work . . . flasks with or without stoppers, in different styles and capacities.

You will find the world's biggest, widest, broadest line of labware in our LG-2 catalog. Remember, too, the quantity discounts—up to 23.5%.

*Union Carbide Trademark

CORNING GLASS WORKS
8603 Crystal Street, Corning, New York
CORNING MEANS RESEARCH IN GLASS

PYREX® laboratory ware... *the tested tool of modern research*

——— *from Saunders*

———*new editions*

new books———

Strauss— *New!*

An Outline of Chemical Genetics

By BERNARD S. STRAUSS, Ph.D., Associate Professor of Microbiology, The University of Chicago. 188 pages, 6″ x 9¼″, illustrated. $5.00. *New!*

Beckman— *New (2nd) Edition!*

Pharmacology:

The Nature, Action & Use of Drugs

By HARRY BECKMAN, M.D., Chairman, Departments of Pharmacology, Marquette University Schools of Medicine and Dentistry; Consulting Physician, Milwaukee County General Hospital and Columbia Hospital; Editor, Year Book of Drug Therapy. 805 pages, 7″ x 10″, with 105 illustrations. $15.50. *New (2nd) Edition—Just Ready!*

Guyton— *New (2nd) Edition!*

Textbook of Medical Physiology

By ARTHUR C. GUYTON, M.D., Professor and Chairman of the Department of Physiology and Biophysics, University of Mississippi School of Medicine. 1181 pages, 7″ x 10″, with 774 illustrations. $15.50. *New (2nd) Edition!*

Orr— *New!*

Vertebrate Biology

By ROBERT T. ORR, Ph.D., Curator of Birds and Mammals, California Academy of Sciences; Professor of Biology, University of San Francisco. About 450 pages, illustrated. About $7.50. *New—Ready in April!*

Prosser & Brown— *New (2nd) Edition!*

Comparative Animal Physiology

By C. LADD PROSSER, Professor of Physiology, University of Illinois; and FRANK A. BROWN, JR., Professor of Biology, Northwestern University. About 1000 pages, 6⅛″ x 9¼″, with about 400 illustrations. *New (2nd) Edition—Ready in July!*

Perez-Tamayo— *New!*

Mechanisms of Disease:

An Introduction to Pathology

By RUY PEREZ-TAMAYO, M.D., Professor and Director Pathology Unit, Hospital General, Escuela de Medicina, Mexico City. About 450 pages, 6⅜″ x 9¾″, with about 250 illustrations. *New—Ready in May!*

Carpenter— *New!*

Microbiology

By PHILIP L. CARPENTER Ph.D., Professor of Bacteriology, University of Rhode Island. About 480 pages, 6⅝″ x 9¾″, with 246 illustrations. About $6.75. *New—Ready in April!*

Handbook of Biological Data

Edited by WILLIAM S. SPECTOR. Prepared under the direction of The Committee on the Handbook of Biological Data, Division of Biology and Agriculture, National Academy of Sciences, National Research Council. 584 pages, 8¼″ x 11″. $7.50.

Davenport—

Histological & Histochemical Technics

By HAROLD A. DAVENPORT, M.D., Professor of Anatomy, Northwestern University Medical School, Chicago, Illinois. 401 pages. 6″ x 9″, illustrated. $7.00.

Ruch & Fulton—

Medical Physiology & Biophysics

Edited by THEODORE C. RUCH, Ph.D., Professor and Executive Officer, Department of Physiology and Biophysics, University of Washington School of Medicine; and the late JOHN F. FULTON, M.D., Former Sterling Professor of the History of Medicine, Yale University School of Medicine; with the collaboration of 22 authorities. 1232 pages, 6⅝″ x 10″, with 616 illustrations. $16.00. *Eighteenth Edition!*

W. B. SAUNDERS COMPANY West Washington Square, Philadelphia 5

MODEL AME1

Astrup *Micro* Apparatus *by* RADIOMETER

The increasing importance being attached to the acid base balance in blood, both in the clinical and research fields, has raised a major requirement for a new approach to these measurements.

Such determinations must be made swiftly, and accurately, with minimum sample requirements, not only for routine clinical use but for the hitherto unserved areas of pediatrics, anesthesiology, and small animal research.

The Ultra Micro Astrup Apparatus by Radiometer fills such a need. A complete acid-base determination covering pH, pCO_2, total CO_2, Standard Bicarbonate, excess acid or base, and Buffer Base (according to Singer and Hastings), can be made **at the bedside** in less than 10 minutes, on a capillary blood sample of 100-125 ul.

Mounted on a wheeled cabinet, the unit is completely self contained except for plug-in connection to the power mains.

Write for further details on the AME1 and the Astrup Method.

(Also available separately is the thermostated Micro Capillary Electrode Set E5020, for blood pH measurements).

SOLD AND SERVICED IN U.S.A. BY

THE LONDON COMPANY

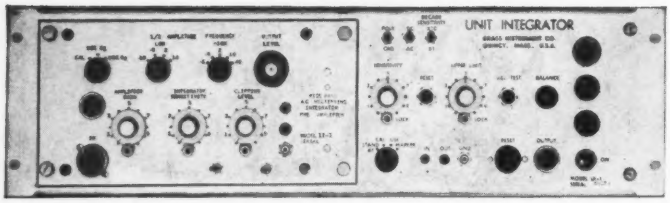
(Formerly Welwyn International Inc.)

3355 Edgecliff Terrace CLEVELAND 11, OHIO

RADIOMETER

72 Emdrupvej COPENHAGEN, DENMARK

In Canada: Contact any Branch of Canadian Laboratory Supplies Limited



SPECIFY

GRASS
MODEL UI-1

UNIT INTEGRATOR
An accessory for the Polygraph

- Provides truly mathematical integration.
- Allows true summation of bioelectric activity over a wide range of time.
- Extremely low drift and high linearity.
- Highly versatile, allowing many adaptations for special applications.
- Companion preamplifiers sold separately allow integration of both AC and DC signals: EMG, EEG, respiration, flow, etc.
- Completely self-contained - normally uses a Model 5 Polygraph Driver Amplifier for Polygraph write-out.
- Supplied with standard rack panel for mounting in a Model 5 Polygraph console, or with individual cabinet.

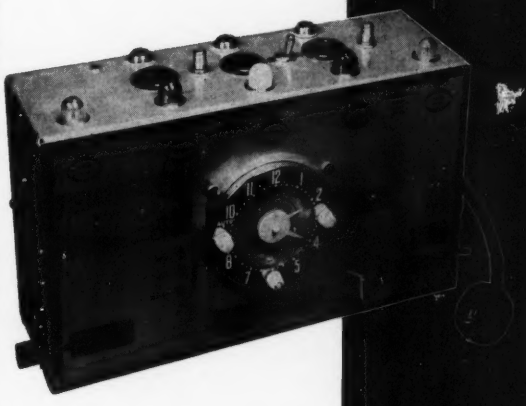
GRASS INSTRUMENT COMPANY

101 OLD COLONY AVENUE - QUINCY, MASS.

INSTRUMENT MAKERS TO THE MEDICAL PROFESSION SINCE 1935

D 001 Q6

S-T-R-E-T-C-H YOUR EXPERIMENTAL DAY
with *BURD-WATCHER II*



T-5530X

Now you can schedule experiments or routine work and know in advance that despite unexpected interruptions the job will be completed satisfactorily. In fact, with a *Burd-Watcher*, you can s-t-r-e-t-c-h your experimental day because it will start reactions and distillations before you arrive in the morning... finish them after you leave at night—all automatically! It's so versatile that it allows almost endless variations in circuitry to fit individual programs needed for chemical reactions and distillations.

Gain extra eyes, ears and hands with this new *fail-safe* monitoring device. For detailed information, ask for bulletin BJ-5.

It...

* automates
* programs
* monitors and controls

reactions and distillations of any size

SCIENTIFIC GLASS APPARATUS CO. INC.
BLOOMFIELD, NEW JERSEY

LABORATORY...
♦ APPARATUS
♦ INSTRUMENTS
♦ CHEMICALS
♦ GLASSWARE

Branch Sales Offices: Albany 5, N. Y. • Boston 16, Mass. • Elk Grove Village, Ill. • Philadelphia 43, Pa. • Silver Spring, Md.
Branch Warehouse: Elk Grove Village, Ill.

For PEPTIDES and PEPTIDE INTERMEDIATES Call SIGMA

Hundreds of Peptides, CBZ, Phthaloyl, and Carbamyl intermediates are now available promptly from stock, or on short notice. Frankly, the list is so long and is growing so rapidly, we don't know how to announce them in advance of a complete new catalog.
In the meantime, send us your specific inquiries—there is a good chance we can help on almost any Blocked Amino Acid or Dipeptide. Tripeptides will come a bit later. If we don't have it already, we will certainly try to include it in our planning.

Have you heard about the Sigma AEROSOL Program?

It is just getting up steam, but already includes the following excellent sprays.

Stock No. NIN-3	Ninhydrin Spray
Stock No. NFX	Ninhydrin Fixer Spray
Stock No. NTL	Ammonia Spray
Stock No. TTZ-1	Triphenyl Tetrazolium Spray
Stock No. ADA-2	Aniline Diphenylamine Spray
Stock No. PRO	Protective Lacquer
Stock No. ISA-2	Isatin Spray
Stock No. BCG-04	Brom Cresol Green Spray

Carton of 3 aerosols of one item ..... $ 7.50
Carton of 6 aerosols of one item 14.50
Carton of one aerosol 2.95
Kit, Stock No. NNP 7.50
(one each NFX, NTL, PRO)
Set, Stock No. ST-1 ..... 14.50
(one each NIN-3, ISA-2, BCG-04, TTZ-1, ADA-2, PRO)

Parcel Post Prepaid
Write for Bulletin!

CALL US COLLECT AT ANY TIME, JUST TO GET ACQUAINTED
Day, *Station to Station*, PRospect 1-5750
Night, *Person to Person*, Dan Broida, WYdown 3-6418

The Research Laboratories of
SIGMA
CHEMICAL COMPANY
3500 DEKALB ST., ST. LOUIS 18, MO., U. S. A.
MANUFACTURERS OF THE FINEST BIOCHEMICALS AVAILABLE

"Science is built up of successive solutions given to questions of ever-increasing subtlety, approaching nearer and nearer towards the very essence of phenomena."

—LOUIS PASTEUR, "Études sur la Bière"

One of the functions of scientific publishing is the recording of "successive solutions given to questions of ever-increasing subtlety." Only after these solutions are recorded in print can they form the basis for answers to further questions. We are keenly aware of this role of publishing in the exchange of ideas, and we hope that our publications, past and future, have been and will continue to be helpful in the progress of science "towards the very essence of phenomena."

We extend a cordial invitation to visit us at the 1961 Federation Meeting. Our representatives will be pleased to have your comments and suggestions and to discuss our editorial program with you. Published titles will be available for browsing, together with information on forthcoming volumes. Should you not be at the meeting, a list of 1960 and 1961 publications is given on the following pages.

Our best wishes for a successful meeting—

Academic Press

Booths 26 and 27
Federation Meeting
April 10-14, 1961
Atlantic City

Etching of Pasteur in his laboratory by Henri Lefort, 1886, after a drawing from life by A. Edelfelt, 1885. Collection of The New York Public Library.

ACADEMIC PRESS NEW YORK LONDON

RECENT AND FORTHCOMING BOOKS

Comparative Neuropathology*
J. R. M. INNES and L. Z. SAUNDERS

The Nervous System
G. M. WYBURN

Response of the Nervous System to Ionizing Radiation*
T. J. HALEY and R. S. SNIDER (eds.)

Mechanisms in Radiobiology
M. ERRERA and A. FORSSBERG (eds.)
Volume 2 (1 *in preparation*)

Biological Approaches to Cancer Chemotherapy*
R. J. C. HARRIS (ed.)

Carcinogenesis
I. HIEGER

The Glycolysis and Respiration of Tumors
A. C. AISENBERG

Toxicology
C. P. STEWART and A. STOLMAN
Volume 1 (2 *in preparation*)

Toxic Phosphorus Esters
R. D. O'BRIEN

Biochemistry of Insects
D. GILMOUR

Physiology of Crustacea
T. H. WATERMAN (ed.)
Volumes 1 and 2

Biology and Comparative Physiology of Birds
A. J. MARSHALL (ed.)
Volumes 1 and 2

The Structure and Function of Muscle
G. H. BOURNE (ed.)
Volumes 1-3

The Eye*
H. DAVSON (ed.)
Volumes 1-4 *in preparation*

The Structure of the Eye
G. K. SMELSER

Biological Structure and Function*
T. W. GOODWIN and O. LINDBERG (eds.)

The Cell
J. BRACHET and A. E. MIRSKY (eds.)
Volumes 1, 4, 5 (2, 3 *in preparation*)

General Cytochemical and Cytophysical Methods
J. F. DANIELLI (ed.)
Volume 1 (2 *in preparation*)

The Cell Nucleus
J. S. MITCHELL (ed.)

Cytology and Evolution
E. N. WILLMER

The Ovary*
S. ZUCKERMAN (ed.)

Milk: the Mammary Gland and Its Secretion
S. K. KON and A. T. COWIE (eds.)
Volumes 1 and 2

Mineral Metabolism
C. L. COMAR and F. BRONNER (eds.)
Volume 1A (1B, 2A, 2B *in preparation*)

Metabolic Pathways
D. M. GREENBERG (ed.)
Volume 1 (2 *in preparation*)

The Enzymes
P. D. BOYER, H. LARDY, and K. MYRBÄCK (eds.)
Volumes 1-5 (6, 7 *in preparation*)

Methods in Enzymology
S. P. COLOWICK and N. O. KAPLAN (eds.)
Volumes 1-4 (5, 6, Index *in preparation*)

The Nucleic Acids
E. CHARGAFF and J. N. DAVIDSON (eds.)
Volumes 1-3

Protein Biosynthesis*
R. J. C. HARRIS (ed.)

Protein Structure*
H. A. SCHERAGA

The Plasma Proteins
F. W. PUTNAM (ed.)
Volumes 1, 2

Functions of the Blood*
R. G. MACFARLANE and A. H. T. ROBB-SMITH (eds.)

Hormones in Blood*
C. H. GRAY and A. L. BACHARACH (eds.)

Methods in Hormone Research
R. DORFMAN (ed.)
Volumes 1, 2 *in preparation*

Mechanisms of Antibody Formation
M. HOLUB and L. JAROŠKOVÁ (eds.)

**Comparative Biochemistry*
M. FLORKIN and H. S. MASON (eds.)
Volumes 1, 2 (3-6 *in preparation*)

The Nature of Parasitism*
W. P. ROGERS

The Bacteria
I. C. GUNSALUS and R. Y. STANIER (eds.)
Volume 1 (2-5 *in preparation*)

Structure and Ultrastructure of Microorganisms
E. M. BRIEGER

Rhythmic Activity in Animal Physiology and Behaviour*
J. CLOUDSLEY-THOMPSON

Free Radicals in Biological Systems
M. S. BLOIS *et al.* (eds.)

Plant Physiology
F. C. STEWARD (ed.)
Volumes 1A, 1B, 2 (3-6 *in preparation*)

Plant Pathology
J. G. HORSFALL and A. E. DIMOND (eds.)
Volumes 1-3

Electrophysiological Methods in Biological Research
J. BUREŠ, M. PETRÁŇ, and J. ZACHAR

Physical Techniques in Biological Research
Volumes 1-3
G. OSTER and A. W. POLLISTER (eds.)
Volumes 4-5 *in preparation*
W. L. NASTUK (ed.)

Physical Methods in Chemical Analysis
W. G. BERL (ed.)
Volumes 1 (*2nd ed.*), 3
(2 [*2nd ed.*], 4 *in preparation*)

Methods in Carbohydrate Chemistry
R. L. WHISTLER and M. L. WOLFROM
Volumes 1-5 *in preparation*

Gas Chromatography
H. J. NOEBELS, R. F. WALL, and N. BRENNER (eds.)

Name Reactions in Organic Chemistry,
Second Edition
A. R. SURREY

A Statistical Manual for Chemists
E. L. BAUER

**Not yet published, in preparation.*

1961 Federation Meeting
Atlantic City, April 10-14

BOOTHS 26–27

SERIAL PUBLICATIONS—1961 VOLUMES

Advances in Applied Microbiology
W. W. Umbreit (ed.)
Volume 3

Advances in Biological and Medical Physics
J. H. Lawrence and C. A. Tobias (eds.)
Volume 8

Advances in Botanical Research
R. D. Preston (ed.)
Volume 1

Advances in Cancer Research
A. Haddow and S. Weinhouse (eds.)
Volume 6

Advances in Carbohydrate Chemistry
M. L. Wolfrom and R. S. Tipson (eds.)
Volume 16

Advances in Catalysis and Related Subjects
D. D. Eley, P. W. Selwood, and P. B. Weisz (eds.)
Volume 13

Advances in Clinical Chemistry
H. Sobotka and C. P. Stewart (eds.)
Volume 4

Advances in Comparative Physiology and Biochemistry
O. E. Lowenstein (ed.)
Volume 1

Advances in Ecological Research
J. B. Cragg (ed.)
Volume 1

Advances in Food Research
C. O. Chichester, E. M. Mrak, and G. F. Stewart (eds.)
Volume 11

Advances in Genetics
E. W. Caspari and J. M. Thoday (eds.)
Volume 10

Advances in Heterocyclic Chemistry
A. R. Katritzky (ed.)
Volume 1

Advances in Immunology
W. H. Taliaferro and J. H. Humphrey (eds.)
Volume 1

Advances in Marine and Freshwater Science
G. Riley and C. H. Mortimer (eds.)
Volume 1

Advances in Morphogenesis
M. Abercrombie and J. Brachet (eds.)
Volume 1

Advances in Protein Chemistry
C. B. Anfinsen Jr., M. L. Anson, K. Bailey, and J. T. Edsall (eds.)
Volume 16

Advances in Veterinary Science
C. A. Brandly and E. L. Jungherr (eds.)
Volume 7

Advances in Virus Research
K. M. Smith and M. A. Lauffer (eds.)
Volume 8

Canadian Cancer Conference
R. W. Begg (ed.)
Volume 4

The Harvey Lectures
Series 55

International Review of Cytology
G. H. Bourne and J. F. Danielli (eds.)
Volume 11

FIRST CLASS
Permit No. 45419
New York, N. Y.

BUSINESS REPLY MAIL
NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY

ACADEMIC PRESS INC.
111 Fifth Avenue
New York 3, New York

ACADEMIC PRESS PUBLICATIONS *(continued)*

International Review of Neurobiology
C. C. PFEIFFER and J. R. SMYTHIES (eds.)
Volume 3

International Review of Tropical Medicine
D. R. LINCICOME (ed.)
Volume 1

Recent Progress in Hormone Research
G. PINCUS (ed.)
Volume 17

Standard Methods of Clinical Chemistry
D. SELIGSON (ed.-in-chief)
Volume 3

Survey of Biological Progress
B. GLASS (ed.)
Volume 4

Symposia of the Society for Experimental Biology
Number 15
Mechanisms in Biological Competition

Symposia on Comparative Biology
Volume 2,
The Lower Metazoa: Comparative Biology and Phylogeny
M. M. J. LAVOIPIERRE (ed.)

Vitamins and Hormones: Advances in Research and Applications
R. S. HARRIS and D. I. INGLE (eds.)
Volume 19

JOURNALS—1961 VOLUMES

Analytical Biochemistry
Volume 2

Archives of Biochemistry and Biophysics
Volumes 92-95

Biochemical and Biophysical Research Communications
Volumes 4-5

Developmental Biology
Volume 3

Experimental Cell Research
Volumes 22-25

Experimental Eye Research
Volume 1

Experimental Neurology
Volumes 3-4

Experimental Parasitology
Volumes 11-12

General and Comparative Endocrinology
Volume 1

Journal of Colloid Science
Volume 16

Journal of Insect Pathology
Volume 3

Journal of Molecular Biology
Volume 3

Journal of Theoretical Biology
Volume 1

Journal of Ultrastructure Research
Volume 5

Radiation Research
Volumes 14-15

Toxicology and Applied Pharmacology
Volume 3

Virology
Volumes 13-14-15

Books will be sent on approval at your request.

Date_____

Name (*please sign*)_____

Name (PLEASE PRINT)_____

Institution_____

Address_____

City_____ Zone____ State_____

☐ Remittance enclosed ☐ Please bill

Please add 3% Sales Tax for New York City deliveries of books.

☐ Please enter the following order:

_____

_____

_____

_____

_____

☐ Please send additional information on:

_____

_____

_____

_____

F670-6102

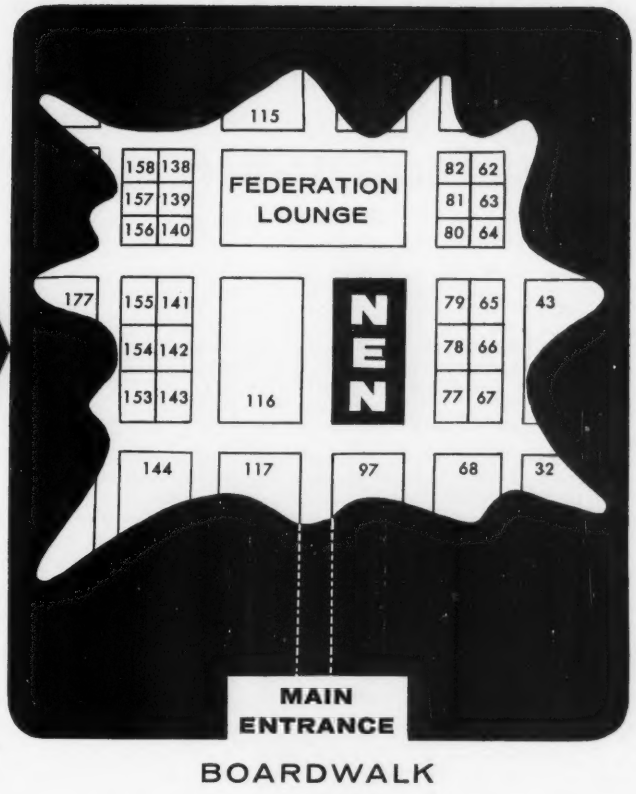
Printed in U. S. A.

▶ We'll be at the CONVENTION HALL in ATLANTIC CITY

BOOTH #96

April 11-14 1961

▶ Members of New England Nuclear Corp.'s technical staff will be in attendance at all times to discuss tracer techniques, labeled compounds and other specific requirements of Federation members.



new england nuclear corp.®

575 ALBANY ST., BOSTON 16, MASS. LI 2-5964

PUMPS FOR PHYSIOLOGICAL RESEARCH

Many phases of physiological research require apparatus which will effect the uniform and predictable flow of liquids and gases. To meet such situations, Harvard Apparatus Co., Inc. makes available, at the lowest possible cost, an extremely wide range of pumping equipment.
In addition to providing the standard pumps described below, Harvard Apparatus Co., Inc. can also manufacture to order special apparatus needed in unusual situations. Inquiries are invited.
All pumps are made with the same fine workmanship and materials that have characterized the Company's equipment for so many years. Each pump will perform exactly as specified and will give years of trouble-free service.

INFUSION-WITHDRAWAL PUMPS

All pumps in this group are operated by synchronous reversing motors and achieve the transfer of liquids by means of motor-driven mechanisms acting on standard Luer-Lok syringes. The syringe piston is attached to a weighted half-nut which rests on a precision-cut lead screw. As the screw turns, a very uniform intake or discharge of liquid takes place. Pre-set limit stops automatically stop pumping action.

Single, dual and multiple syringe models are available, ranging from simple types designed for either infusion or withdrawal to those performing both operations continuously and automatically over extended periods of time.

Both single and multi-speed models are available. The multi-speed pumps are equipped with a transmission which provides 12 separate speeds and 72 pumping rates using syringes from 50 to 2 cc. size. Single speed units deliver one fixed speed and 6 pumping rates using syringes in the same range of sizes. A range of motors from 1 to 1800 R.P.M. is available.

RESPIRATION PUMPS

These are motor-operated, positive displacement pumps for use with small mammals. Air or gas is drawn into a cylinder in one half of the cycle and delivered to the animal in the next half of the cycle. The stroke volume is adjustable mechanically from 30 to 750 cc. per stroke. A motor-operated slide valve provides separate ports for inspiration and expiration. The expired air may be collected or recycled at the slide valve.

Single and multi-speed models are available. In the latter, motor and speed control box produces rates continuously adjustable from 7 to 50 strokes per minute. The single speed model produces a fixed rate of 22 strokes per minute.

PERISTALTIC PUMPS

These are heavy-duty units achieving the continuous flow of liquids by means of peristaltic action on the outside of rubber tubing.

Catalog 1960–1961 and Data Sheets are available on request.

All apparatus will be on display at the Federation Meetings in Atlantic City—Booths 178 and 179.

HARVARD APPARATUS CO., INC. • Dover, Mass., U.S.A.

(a non-profit organization)

DIAGNOSTIC AND RESEARCH INSTRUMENTS FOR CARDIO-PULMONARY STUDIES

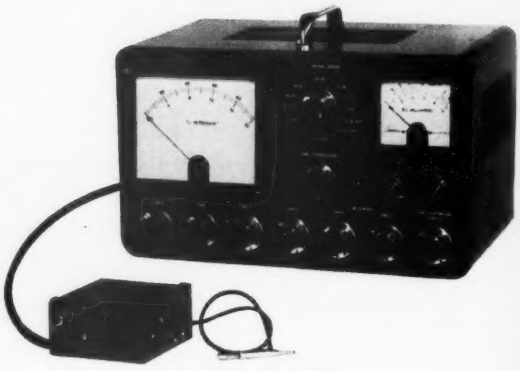
NITROGEN GAS ANALYZERS

Nitralyzer 105 - A simplified, reliable, utility model with two ranges of nitrogen concentrations, 0-80% and 0-20%.

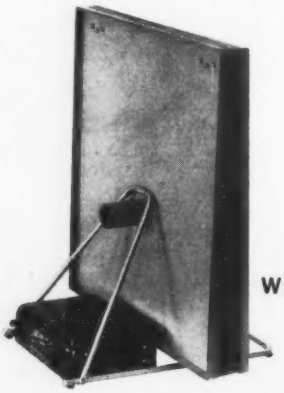
Nitralyzer 300AR - The most complete nitrogen meter, incorporating nine ranges including two zero suppression scales, a built-in vacuum gauge, and sufficient output to drive many ink writers direct.

Nitralyzer DELTA - An accessory instrument for any nitrogen meter . . . it is specifically designed to perform the Single Breath Test by indicating the difference in nitrogen concentrations between the 750 and 1250 milliliter volume points for a single expiration. Does not require the use of an auxiliary electrical recorder.

Single Breath Tester 125 - A complete self-contained system designed to produce an automatic record of the single breath nitrogen washout test without the need of any additional equipment. The instrument contains a nitrogen meter, pump, volume detector, recorder, and space for an oxygen tank.



Nitralyzer 300AR



WEDGE

WEDGE Spirometer 170

SPIROMETERS

MOUSE Spirometer 160 - An extremely accurate volume indicator which can be used to measure small changes in volume such as those obtained in oxygen uptake studies of small animals.

WEDGE Spirometer 170 - An uncomplicated, reliable, high-dynamics spirometer which provides simultaneous electrical output signals for volume and flow. The instrument is waterless but airtight and offers virtually zero resistance to breathing.

Servo-Spirometer 250 - Electrically driven servo-controlled spirometer with extremely high dynamic response for following the widest range of human inputs with no loading of the patient.

Servo-Spirometer 350 - Similar dynamics as the Model 250 but has higher accuracy and greater flexibility provided by a variety of scales and gain controls. Can be programmed for automatic re-cycling and used for many extended studies not heretofore practical.

DATA CORRECTOR

DOC—Data Optimizing Computer 190 - A single function analogue computer which automatically adds correction data to the output signals of any electrical device so that the resultant data can be interpreted directly without reference to calibration curves. The calibration correction data can be quickly changed making it practical to have one DOC for use with several non-linear instruments.

SAMPLERS

Six Shooter Gas Sampler 180 - An inexpensive device which extracts 25 milliliter volumes of gas from a stream. Can extract 5 samples in rapid succession upon electrical actuation. Removes sample without mixing and with zero dead space.

Blood Sample Collector Cugell 130 - A constant volume pump mounted with a collector assembly which can collect 60 samples in equal intervals of time. The pumping chamber is disposable and both the pumping rate and volume are adjustable.

DOC

Data Optimizing Computer 190

For complete specifications write or call

ELECTRONIC CEDEC ENGINEERING

CUSTOM ENGINEERING AND DEVELOPMENT CO.

TELEPHONE JEFFERSON 5-7800 • 2641-49 LOCUST STREET • ST. LOUIS 3, MO.

See Us at Booth #22 C and D, April FEDERATION Meeting

We'll
be at the
CONVENTION HALL
in
ATLANTIC CITY

BOOTH #96

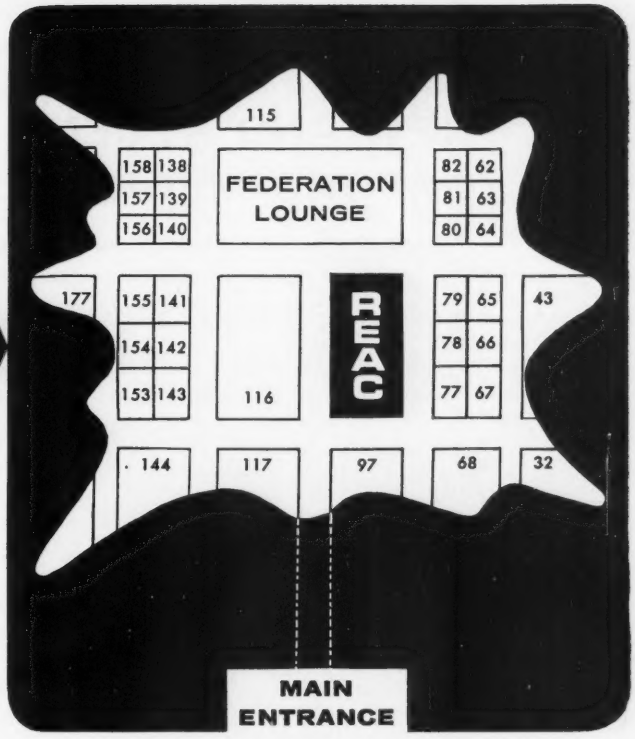
April 11-14 1961

REAC will present equipment for research and educational applications in the life sciences. Principal items include chromatographic apparatus, transistorized teaching devices and a full range of scintillation detectors.

REPRESENTED BY NUCLEAR INDUSTRIES

REAC

RADIATION EQUIPMENT AND ACCESSORIES CORPORATION
665 MERRICK ROAD, LYNBROOK, NEW YORK LYNBROOK 3-3570



BOARDWALK

worthington

PEROXIDASE

(Horseradish)

Any quantity — Any grade

Grade A has an RZ > 2.0 • Grade B has an RZ > 1.0 • Grade C—Cruder-as specified

For information write:

WORTHINGTON BIOCHEMICAL CORPORATION

FREEHOLD 3, NEW JERSEY

NEW AND RECENT OXFORD MEDICAL BOOKS

WRIGHT: APPLIED PHYSIOLOGY, Tenth Edition

revised by C. A. Keele, Professor of Pharmacology and Therapeutics, University of London, Middlesex Hospital Medical School, and E. Neil, John Astor Professor of Physiology, University of London, Middlesex Hospital Medical School

April 1961 632 pp. 484 illus. $13.50

ALCOHOLISM AND SOCIETY

by Morris Chafetz, Director, Alcohol Clinic, Massachusetts General Hospital; and Harold W. Demone, Jr., Commissioner of Mental Health, Massachusetts Fall 1961 350 pp. prob. $7.50

MEASUREMENT OF SUBJECTIVE RESPONSES:
Quantitative Effects of Drugs

by Henry K. Beecher, Dorr Professor of Research in Anaesthesia, Harvard University; Anesthetist-in-chief, Massachusetts General Hospital 1959 496 pp. references $12.75

DIAGNOSTIC BIOCHEMISTRY:
Quantitative Distributions of Body Constituents and Their Physiological Interpretation

by Halvor N. Christensen, Chairman, Department of Biochemistry, University of Michigan Medical School 1959 393 pp. illus. $6.50

TEXTBOOK OF TOXICOLOGY

by Kenneth P. Du Bois, Director, U. S. Air Force Radiation Laboratory, University of Chicago, and E. M. K. Geiling 1959 329 pp. illus. $6.50

THE CLINICAL APPLICATION OF ANTIBIOTICS, Volume IV:
Miscellaneous Antibiotics

by Lady M. E. Florey, Oxford University 1960 324 pp. illus. $19.50

PRINCIPLES OF HUMAN PATHOLOGY

by Edward H. Smith, Parker R. Beamer, Frank Vellios, and Dale M. Schulz, Pathology Department, Indiana University School of Medicine 1959 1024 pp. illus. $15.00

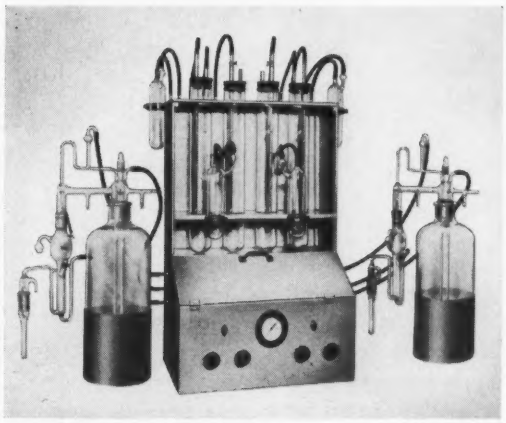
FOUNDATIONS OF PSYCHOPATHOLOGY

by John C. Nemiah, Associate in Psychiatry, Harvard Medical School; Psychiatrist, Massachusetts General Hospital 1961 352 pp. $6.50

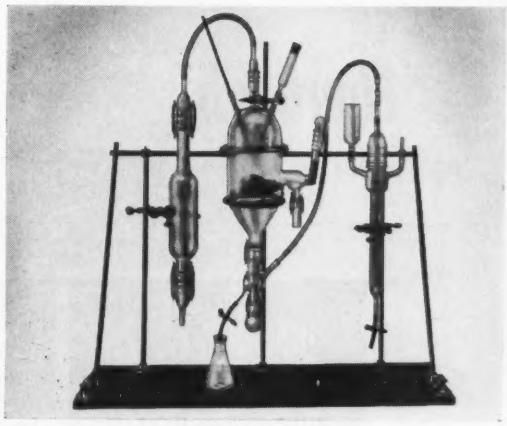
OXFORD UNIVERSITY PRESS
417 Fifth Avenue, New York 16, N. Y.

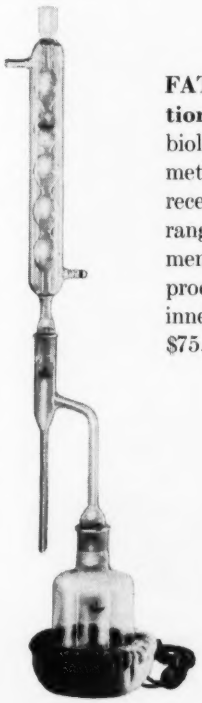
Delmar · new concepts in scientific glassware

CHEMOSTAT . . . continuous, automatic culture apparatus for microorganisms. A complete system for growing bacterial populations in logarithmic phase with density and growth under full control. Density changes are controlled by variation of the growth factor in the nutrient. Growth rate is regulated by an adjustable timer that allows nutrient to enter at selected rates. The Delmar Chemostat comes complete and ready to operate with all glassware and with automatic control system. Single unit, DS-8031—$355.00; double unit, DS-8032—$575.00. For full details, ask for **Chemostat Bulletin W.**



METABOLISM CAGE . . . for Carbon-14 tracer studies in rats and mice. The only available high precision apparatus for quantitative metabolism studies. It offers total control of input and collection for metabolic processes. The design features a unique method for separating feces and urine, and for virtually total absorption of expired CO_2. A feeding system prevents animals from bringing food into the system. The Delmar Metabolism Cage simplifies collection of precise data. It is especially convenient to use and easy to clean. Comes complete in 3 cage sizes: 3½″ cage for mice, DS-7010—$252.25; 6″ cage for rats, DS-7000—$298.25; 8″ cage for guinea pigs, DS-7005—$350.00. For complete data, ask for **Metabolism Cage Bulletin W.**





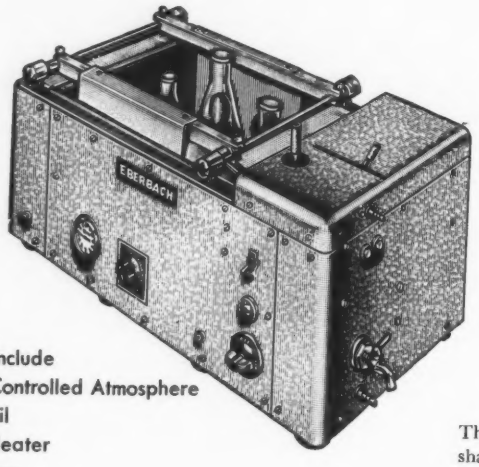
FAT EXTRACTOR (Wistreich) for rapid moisture and fat determination. This method for the simultaneous extraction of moisture and fat from biological materials reduces a 24 hour task to 3 hours (proven against AOAC method; correlation coefficient .99). The apparatus includes a reflux condenser, receiver arm and a special 780 ml flask. The flask has two compartments arranged so solvent returns from the condenser directly to the inner compartment and moves to the other only by overflowing. On completion of the process, the fat has collected in the graduated receiver, the solvent is in the inner flask cell and the moisture has been dissipated or collected. Price—only $75.00 each. For full details, ask for **Fat Extractor Bulletin W.**

YOU CAN SEE THIS EQUIPMENT IN BOOTH 65 AT THE FASEB MEETING APRIL 10 THRU 14.

Delmar
SCIENTIFIC LABORATORIES
317 MADISON ST., MAYWOOD, ILL.

Modern glassware systems for vacuum, distillation, special purposes; plus accessories, tools, gauges, valves, etc. Write for Catalog 60-DW

A SUBSIDIARY OF COLEMAN INSTRUMENTS, INC.



Accessories Include
Hood for Controlled Atmosphere
Cooling Coil
Auxiliary Heater
Gable Cover

Eberbach
CORPORATION
P.O. Box 1024, Ann Arbor, Michigan

Eberbach
WATER BATH SHAKER

This table model Water Bath Shaker provides continuous duty shaking in the range of 0 to 400 complete excursions per minute. Guarantees constant speed in spite of variation in line voltage or changes in load. Water temperature in bath can be controlled up to 80°C, ±0.5°C. Automatic water level control maintains depth in bath between 1½–4 inches. Stainless steel flask carrier measures 14 inches by 10 inches. May be used as shaker or water bath only. Cover for controlled atmosphere available. Request catalog 60GM.

Model 6250 ..... $485.00

INSTANT
THOROUGH
MIXING!

NEW!

VERSATILE
VORTEX JR. MIXER

No Stoppers...No Rods
No Finger Capping

Saves time and energy. For use whenever a quick mix is called for... works well with any shape vessel.

- Test tubes...micro to 40 mm.
- Centrifuge tubes...all sizes
- Florence or Erlenmeyer flasks...small size
- Square or specially-shaped tubes.

Convenient Efficient Mixing

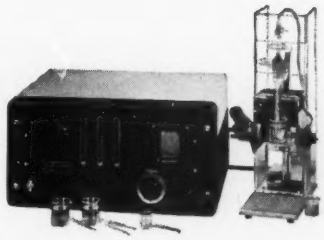
Just hold the tube or other vessel in your hand...press it against the revolving neoprene cup. A vortex forms at once for immediate mixing action!

Ask your Laboratory Supply Dealer for full particulars, or write to:
Scientific Industries Inc.
DEPT. FP-3C 15 PARK STREET, SPRINGFIELD, MASS.

See our Booth at Federation Exhibit, Atlantic City, April 10-14th

PROBLEM:
count 6,000 cells per second

ONLY SOLUTION:
the Coulter Counter®



Patented in U.S.A., Great Britain, France, Germany, Japan, Brazil and throughout the world.

Electronically counts, sizes red or white blood cells, tissue cultures, bacteria, protozoa . . . 1 by 1!

Speed: unprecedented. **Accuracy and reliability:** unparalleled. **Economy:** substantial. **Customary "count" tedium:** eliminated. A few reasons why the Coulter Counter is standard in over 1500 hospitals and research centers.

Learn why the Coulter Counter is accepted as a major breakthrough in cell analysis. Write today for complete details.

Trade Mark

COULTER ELECTRONICS
2525 North Sheffield Avenue, Chicago 14, Illinois
Call collect: EAstgate 7-8025

See us in Booths 219 and 220 at the Convention

ELECTROCHEMICAL INSTRUMENTS

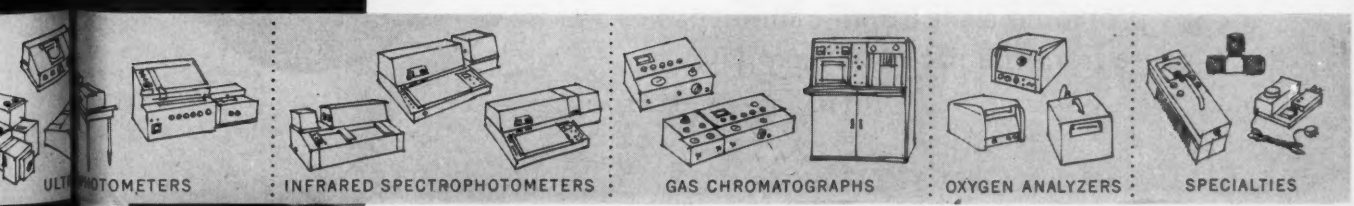
The original pH meter, developed by Dr. Arnold O. Beckman, is demonstrated to Dr. Leland G. Cole, Vice President-Research. Also illustrated is part of the large family of Beckman instruments serving science and industry today.

Instrumental in your future... since 1935.

Today's growing family of Beckman precision instruments began with the first commercially available pH meter, developed by Dr. Arnold O. Beckman. Pioneering a revolutionary electrochemical technique, this principle helped establish the modern standard for advanced pH analysis and control. Over the past 25 years, nearly 100,000 Beckman pH meters have served to prove this. ⌘ In 1940, Beckman introduced the first commercial quartz spectrophotometer, followed two years later by the first commercial infrared instrument. Today, more Beckman UV and IR spectrophotometers have been used in more laboratories and for more applications than all others combined. ⌘ Beckman leadership, also well established in many diverse applications of gas analysis, was further extended in 1959 with the announcement of the Megachrom* preparative gas chromatograph.** ⌘ The unique heritage of these first-generation Beckman instruments... advanced design and outstanding performance... will prevail in those of tomorrow. Further assurance of dependable performance... in scientific laboratories and industrial processing... is provided by Beckman's field service and maintenance organization second-to-none. For details on these broad lines and complementary accessories, write for Data File 91-3-15.

Beckman
Scientific and Process Instruments Division
Beckman Instruments, Inc.
Fullerton, California

INSTRUMENTAL IN YOUR FUTURE · 25 YEARS · 1935-1960



*TRADEMARK, BII

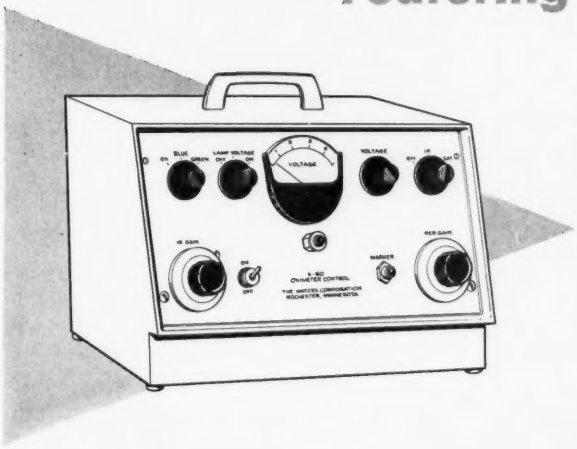
**PATENT APPLIED FOR

Coca-Cola, too, has its place in a well balanced diet. As a pure, wholesome drink, it provides a bit of quick energy ... brings you back refreshed after work or play. It contributes to good health by providing a pleasurable moment's pause from the pace of a busy day.

DRINK
Coca-Cola
TRADE-MARK ®

NEW INSTRUMENTS FOR 1961

Featuring Quality Design

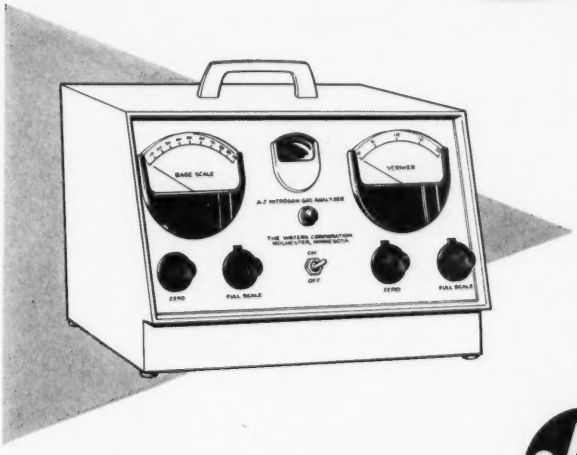


X-90A OXIMETER RECORDING SYSTEM

An all-new system for recording blood oxygen saturation as well as Evans and Cardio-Green dye-dilution curves using the Waters oximeter earpiece or cuvette. Write for Bulletin X-90/61.

X-65 OXIMETER

An improved, simplified instrument for immediate continuous determination of blood oxygen saturation of either whole blood samples or arterial blood. Write for Bulletin X-65/60.



A-7 NITROGEN GAS ANALYZER

A new, smaller size analyzer for continuous measurement of N_2 in gas mixtures has simplified, more accurate operation at a lower cost. Write for Bulletin A-7/61.

Factory trained representatives are located throughout the United States.

Waters | electro-medical instruments

THE WATERS CORPORATION

ROCHESTER, MINNESOTA

Scientific Manuals

of importance from Burgess

AN INTRODUCTION TO THE EXPERIMENTAL METHOD

James Maxwell Little
Bowman Gray School of Medicine
Wake Forest College

This book directs special attention to the design of experiments and the evaluation of variation by the less complicated statistical methods. The few technical terms which are used are fully explained. Mathematical manipulations are at the level of arithmetic and secondary school algebra. Both the reader who wants to understand research reports, and the investigator who will go on to more complex treatises will find the book a valuable aid.

Available March 1961 Price open

ELEMENTARY HUMAN PHYSIOLOGY LABORATORY AND DEMONSTRATION MANUAL

A. B. Taylor, Frederick Sargent II
University of Illinois

The series of experiments contained in this book will give the beginning student a concept of the scientific method and how it works, an insight into experimental physiology, and an opportunity for first-hand observation of some important functional concepts in a dynamic science. Experiments have been selected to meet the general educational and professional needs of many different student groups. Beginning students can easily execute and complete them.

Available April 1961 Price open

HANDBOOK OF CELL AND ORGAN CULTURE

Donald J. Merchant, Raymond H. Kahn,
William H. Murphy, Jr.
University of Michigan

Both the beginning and the advanced research worker will find this manual useful in laboratory work. Carefully selected material summarizes and integrates literature concerning cell and organ culture techniques and their application to cellular biology, embryology, endocrinology, immunology and virology. Principles involved in each exercise are outlined, selected references are included and helpful hints are offered. These basic exercises are usable at either undergraduate or graduate level.

1960 195 pages $4.00

LABORATORY EXERCISES IN INVERTEBRATE PHYSIOLOGY

John H. Welsh, Harvard University
Ralph I. Smith, University of California

To keep in step with advances in invertebrate physiology, the authors have re-written most of the exercises, deleted some and added others. The set of problems and references included help the student to integrate the diverse materials being studied and reported upon in the laboratory while acquainting him with scientific journals and other available resources. Exercises are planned as individual problems designed to familiarize the student with the activity of the living invertebrate. Experiments suggested are intended to be planned in more detail by the student as he assembles and prepares animals and apparatus, carries out the experiment and summarizes results.

1960 187 pp. $3.50

order from

BURGESS PUBLISHING COMPANY

426 South Sixth Street • Minneapolis 15, Minn.

K & K LABORATORIES, INC.

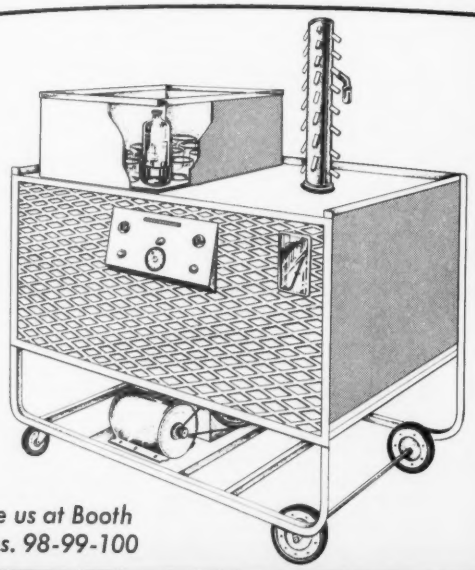
ENZYMATIC PREPARATIONS

alpha-CHYMOTRYPSIN	
3x cryst, salt-free, lyoph. 8000 ATEE units/mg	$ 17.00/g
beta-CHYMOTRYPSIN	
2x cryst, salt-free	$ 32.50/g
gamma-CHYMOTRYPSIN	
2x cryst, salt-free, lyoph.	$ 32.50/g
alpha-CHYMOTRYPSINOGEN	
6x cryst, salt-free	$ 11.00/g
DESOXYRIBONUCLEASE	
salt-free, lyoph, 90000 Dornase units/mg	$ 75.00/250mg
HYALURONIDASE	
salt free, lyoph, 300 Int. units/mg Ovine	$ 22.00/g
" " " " " Bovine	$ 24.00/g
" " " 500 " Ovine	$ 30.00/g
HYALURONIC ACID	
lyoph, protein-free	$180.00/g
PEROXIDASE	
salt-free, lyoph, 60 units/mg, RZ-0.6	$ 55.00/g
RIBONUCLEASE	
5x cryst, salt-free, proteose-free, 40 Kunits units/mg	$ 45.00/g
TRYPSIN	
2x cryst, 50% $MgSO_4$, 8000+BAEE units/mg	$ 9.00/g
TRYPSINOGEN	
1x cryst, 50% $MgSO_4$	$ 12.00/g
URICASE	
lyoph, hog, liver, 5.0 units/g, with $NaCO_3$	$ 18.00/g

Write for Catalog No. 3
Listing Over 12,000 Rare & Fine Organics

177-10 93rd Avenue Jamaica 33, N.Y.

Centrifugal Freeze Dryer



See us at Booth Nos. 98-99-100

INSTRUMENTATION ASSOCIATES
Distributors of
Laboratory and Scientific Specialties
17 West 60th Street New York 23, N. Y.

one-fifth
the weight
of glass
...and
infinitely
safer!

New *Nalgene*®

5-gallon Solution Bottle

SAFEST EVERY WAY! Blow-molded of virgin polypropylene —all the corrosion resistance of glass, in the most punishment-proof bottle you've ever seen! Drop it empty: it just bounces. Drop it full: it *may* crack, *can't* shatter.

Easily cleaned—can't sustain bacterial growth—*withstands repeated autoclaving*. Tooled to fit the standard No. 12 rubber stopper.

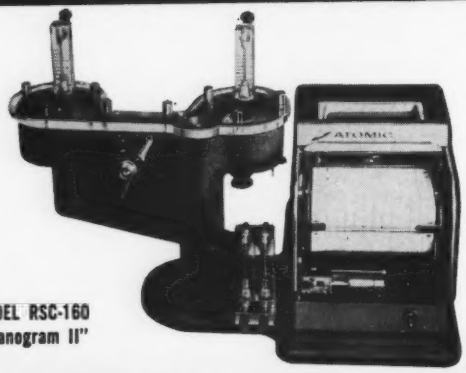
EASIEST TO HANDLE! Weighs only 2½ pounds (versus 11 pounds for glass). And wet or dry, it never gets slippery like glass. Next time you order, specify Nalgene—and see how much easier these new solution bottles are on you . . . and on your budget. Just check with your laboratory supply dealer.

WRITE Dept. 303 for new catalog of the complete line of Nalgene laboratory ware.

THE NALGE CO., INC.
ROCHESTER 2, NEW YORK
The Quality Standard of Plastic Laboratory Ware

SEE THIS NEW SOLUTION BOTTLE AT BOOTH 192 AT THE FEDERATION SHOW

Ultra-Sensitive



MODEL RSC-160
"Scanogram II"

Automatic Windowless 4π Chromatogram Scanner

LABORATORY ACCURACY for counting **TRITIUM**, carbon 14 and sulphur 35

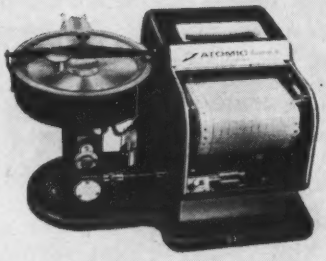
THE MOST SENSITIVE SCANNER AVAILABLE

Scans both sides of a strip simultaneously, in gas-filled chamber. Provides true windowless operation . . . especially designed for counting tritium more efficiently than any other scanner.

Also Available

MODEL RSC-5B
"Scanogram I"

Automatic 2 π windowless chromatogram scanner. Scans one side of strips up to 56 cm long.



May we perform a scan for you at no extra charge? Send us a Radio Chromatogram.

Write for bulletin 4 P

ATOMIC *accessories inc.*

Subsidiary of Baird-Atomic, Inc.

811 W. Merrick Rd., Valley Stream, N. Y. CUrtiss 5-9300

Represented Nationally by Baird-Atomic Sales Offices in:

Boston • New York • Philadelphia • Cleveland • Washington, D. C.
Atlanta • Chicago • Detroit • Dallas • Los Angeles • San Francisco
In Canada: Ottawa, Ontario

Model 2000 From General Measurements Inc., Div. of Precision Scientific Co.

New!

CONTINUOUS RADIOACTIVE GAS and LIQUID **Analyzers**

Complete automatic systems for in-stream gas and liquid analysis, using the most efficient techniques, an ion - chamber - electrometer combination and scintillation counting.

- **VERSATILE:** For small and large animal experiments, and human studies.
- **SENSITIVE:** Require minute experimental doses of radioactivity.
- **CUSTOM-BUILT:** Can be modified to suit your applications. Wide selection of accessories.
- **TROUBLE-FREE:** Units in operation over one year without maintenance and service calls.

Model 3000 — Continuous Liquid Scintillation Counter. Automatically detects and records radioactive fractions from any chromatographic column. Effluent may be collected in a fraction collector for further evaluation.

Model 2000 — Continuous Radioactive and Non-Radioactive Metabolic Analyzer. Permits continuous measurement of $C^{12}O_2$ excretion by infra-red absorption, $C^{14}O_2$ excretion by ion chambers, and specific activity by a ratio-analysis circuit and recorder. See photo above.

Model 1100 — Low Level Analyzer. For continuous in-stream analysis of respiratory $C^{14}O_2$ from animals or humans.

For more information, ask for Bulletin 2000 F

ATOMIC *accessories inc.*

Subsidiary of Baird-Atomic, Inc.

811 W. Merrick Rd., Valley Stream, N. Y. CUrtiss 5-9300

Represented Nationally by Baird-Atomic Sales Offices in:

Boston • New York • Philadelphia • Cleveland • Washington, D. C.
Atlanta • Chicago • Detroit • Dallas • Los Angeles • San Francisco
In Canada: Ottawa, Ontario

A one-volume coverage of the entire subject by internationally recognized authorities—
offered at a special pre-publication price!

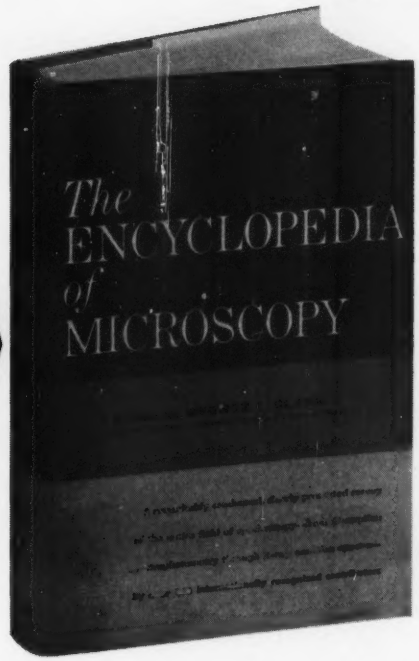
REINHOLD

Publishers of the Encyclopedia of Microscopy, Encyclopedia of Spectroscopy, Encyclopedia of Chemistry

The ENCYCLOPEDIA of MICROSCOPY

edited by GEORGE L. CLARK
Research Professor of Analytical Chemistry, University of Illinois

1961, over 650 double-column pages, 7" x 10", over 140 articles, 600 illustrations.



Special **PRE-PUBLICATION OFFER**

Price through April 30, 1961 . . $22.50
Price after April 30, 1961 . . . . $25.00

ORDER NOW AND SAVE $2.50!

COVERS 26 KINDS OF MICROSCOPY

HERE IS the most extensive collection of information ever published on microscopy in one volume. The biological, medical, pharmaceutical, forensic, chemical, engineering and industrial applications of microscopy as presented in this work are easily the most complete and up-to-date ever offered in any kind of text or reference work. The coverage of 26 kinds of microscopy, including every conceivable aspect of electron, electron mirror and field emission microscopy, by the most eminent authorities in the world is a major scientific achievement.

Completeness and importance of coverage is also exemplified by articles whch present the microscopic identification of textile fibers, high polymers, plastics, and the like. Entirely new and unpublished material on the solid image microscope, the ultrasonic microscope, and on flying spot and TV microscopes is included.

CONTAINS HUNDREDS OF OUTSTANDING ILLUSTRATIONS

More than 600 excellent illustrations feature actual electron micrographs, photographs of equipment, and diagrams. This indispensable *Encyclopedia* will prove of great value to everyone who uses a microscope—whether in biology, medicine or industrial research.

SECTION HEADINGS TO THE MORE THAN 140 ARTICLES:

Autoradiography — Chemical Microscopy — Electron Microscopy — Electron Mirror Microscopy — Field Emission Microscopy — Fluorescence Microscopy — Flying Spot Microscopy — Forensic Microscopy — General Microscopy — Historadiography — Industrial Hygiene Microscopy — Infrared Spectroscopy — Interference Microscopy — Light (Optical) Microscopy — Metallography — Micrometron Automatic Microscope — Optical Mineralogy — Phase Microscopy — Polarizing Microscopy — Resinography — Stereoscopic Microscopy — TV Microscopy — Ultramicroscopy — Ultrasonic Absorption Microscopy — Ultraviolet Microscopy — X-Ray Microscopy.

This comprehensive and authoritative treatment of the broad field of microscopy takes on major significance in view of discoveries such as the electron, X-ray and ultrasonic microscopes. *The Encyclopedia of Microscopy* is a landmark in its subject, and a fine companion volume to its contemporary volumes, *The Encyclopedia of the Biological Sciences* and *The Encyclopedia of Spectroscopy*.

10 DAY FREE TRIAL OFFER!

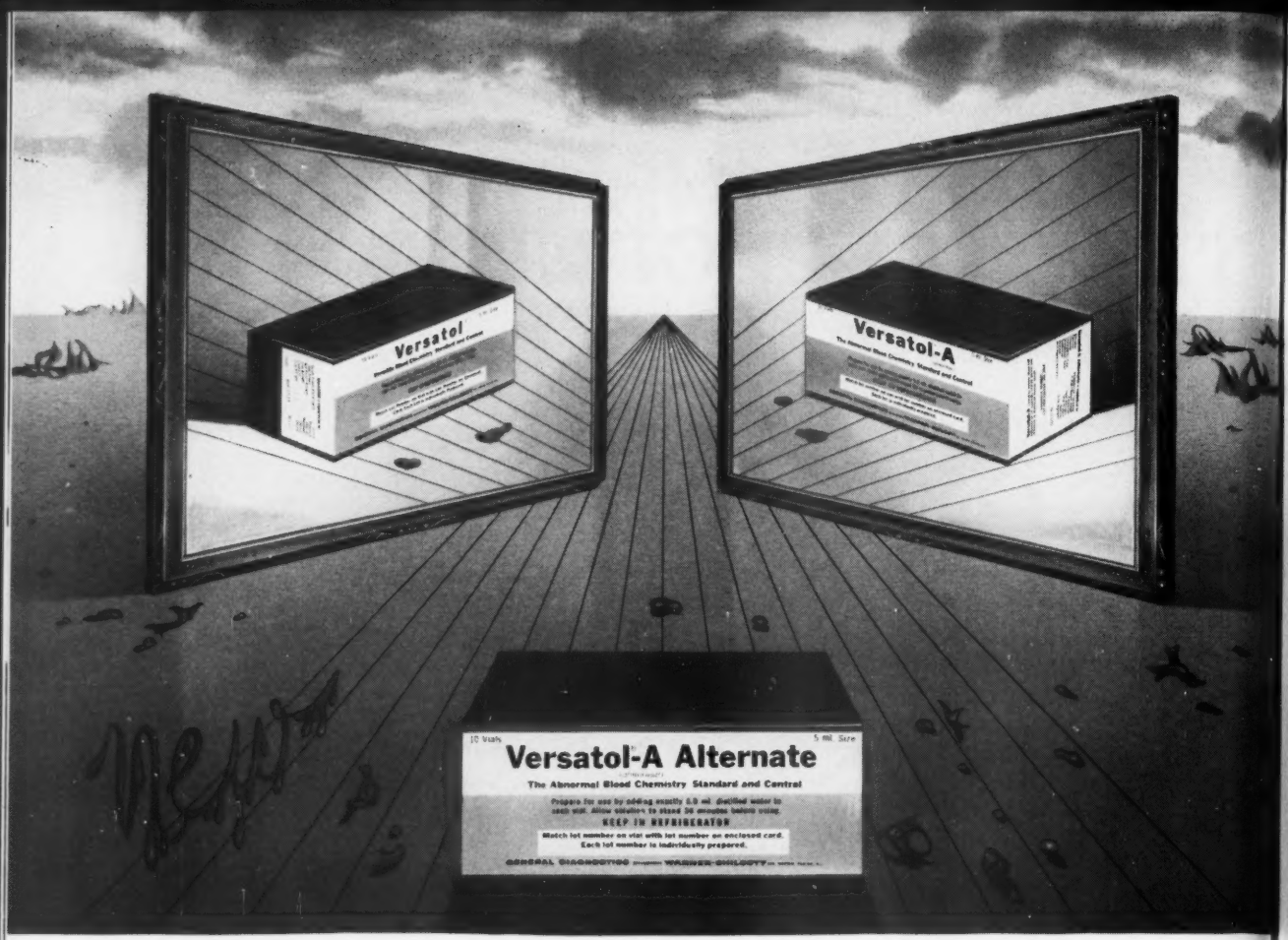
REINHOLD PUBLISHING CORPORATION
Dept. M-781, 430 Park Avenue, New York 22, N. Y.

Send me_____copy(ies) of *The Encyclopedia of Microscopy* for 10 days' FREE TRIAL at the special pre-publication price of $22.50 each. (I understand that after April 30, 1961, the price is $25.00 each).

☐ Total purchase price enclosed (check or money order). Reinhold pays all shipping costs. Please add 3% sales tax on N.Y.C. orders.
☐ Bill me ☐ Bill company for total purchase price plus shipping costs

Please print
NAME_____
ADDRESS_____
CITY_____ ZONE_____ STATE_____

SAVE MONEY! You save postage and delivery charges by sending payment with order. Same return privilege guaranteed. Send check or money-order only. DO NOT ENCLOSE CASH!



Reflections of a Blood Chemistry Standard

To reflect without distortion chemical changes in the patient, a new standard-in-serum is now available to extend the range of the Versatol series.

VERSATOL-A ALTERNATE, the new product for the quality clinical laboratory, has each of 16 constituents standardized in the abnormal range.

VERSATOL-A ALTERNATE is essentially a mirror image of Versatol-A. VERSATOL-A ALTERNATE provides blood chemistry values constructed for clinically significant pathological areas different from those in VERSATOL-A.

For example, the PBI in Versatol-A is abnormally low, the area which so often proves troublesome. In VERSATOL-A ALTERNATE the PBI is abnormally high—because so many have asked for an abnormally high reference point to use in calibration—and, of course, as a control for elevated PBI specimens.

Of course, Versatol is the ideal *normal* serum standard and control. All three standards derive from a human serum base—with specific constituents selectively dialyzed out—or reduced to a constant level. Their known absolute values are actual weigh-in values, as is true of any primary standard.

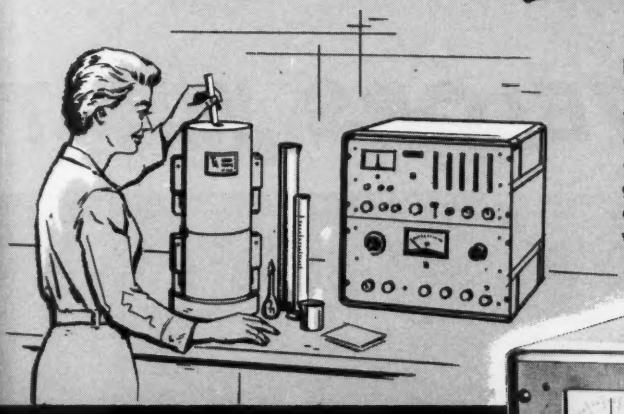
Remember: In the Versatol series you have the *quality* standard and control serum products at *routine* control prices.

Initially, VERSATOL-A ALTERNATE is available in boxes of 10 vials each. Reconstitution with 5 ml. of distilled water provides a 5.3 ml. of standard solution per vial. Cost to the laboratory, like Versatol and Versatol-A 10's, is $21.00 per box, or $0.39 per ml.

Place your order today for VERSATOL-A ALTERNATE and the other products in the Versatol series.

GENERAL DIAGNOSTICS DIVISION **WARNER-CHILCOTT** DIV. MORRIS PLAINS, N.J.

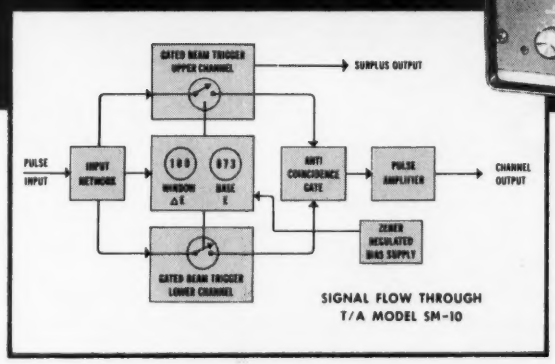
New T/A Spectrometry Systems feature gated beam circuits for EXCEPTIONAL STABILITY!



Technical Associates announces its new line of Gamma Ray Spectrometry Systems, featuring the use of gated beam discriminator circuits. Hysteresis effect is eliminated, for all practical purposes, and exceptional window stability is achieved by the precise triggering pulse produced by the gated beam circuit. Use of Zener diode regulators in the window circuit further enhances its stability.

LYRA SYSTEM is composed of Model SM-10 Spectrometer and either Model DS-5B Decade Scaler or Model GS-7 Binary Scaler. This system utilizes the linear amplifier, single channel pulse height analyzer, and ratemeter circuits of the Model SM-10, and the high voltage power supply of the scaler. It offers both scaler and ratemeter read-out, and thus provides complete versatility at a very low cost.

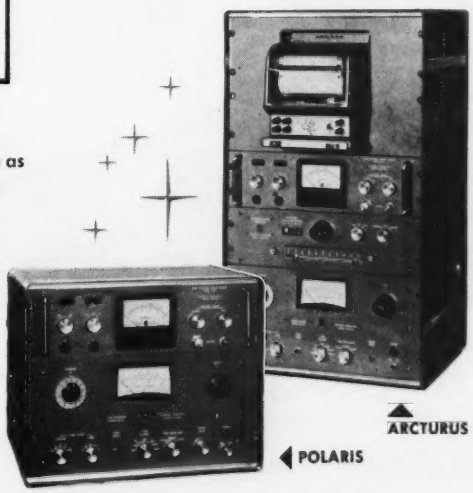
$1635.00



SIGNAL FLOW THROUGH T/A MODEL SM-10

Diagram at left shows signal flow through gated beam trigger circuits which are biased by means of the window and baseline controls.

Technical Associates offers a wide range of Spectrometry Systems . . . from a simple combination of instruments, such as the Polaris . . . to a more complex combination, such as the Arcturus, which features the SS-30 Spectrum Scanner (motor-driven potentiometer) and a chart recorder.



ARCTURUS

POLARIS

For complete details, write for Bulletin No. 171

TECHNICAL ASSOCIATES

"Instrumentation for Nuclear Research"

140 WEST PROVIDENCIA AVENUE • BURBANK, CALIFORNIA

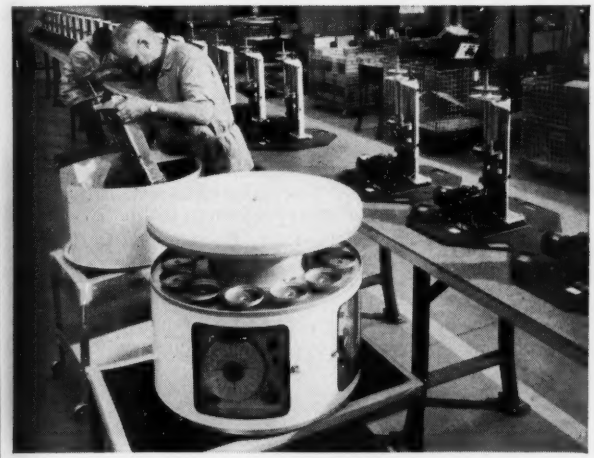
FISHER DEVELOPS WHAT

Measure hemoglobin content of blood directly by speedy, accurate Drabkin cyanmethemoglobin method with new Fisher Hemophotometer. Model 55 has expanded scale covering most useful range: 4 to 20 gms Hb. It's easy to read meter to ±0.1 gm Hb. Over-all accuracy of ±0.25 gm Hb is unaffected by changes in line voltage or intensity of light source.

YOU NEED!

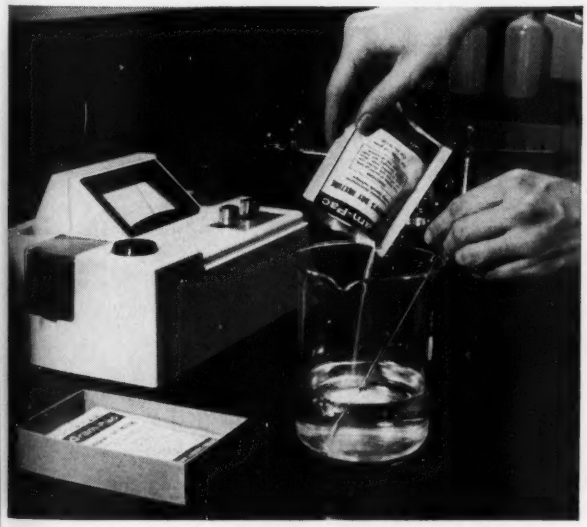
Just developed by Fisher Scientific is the Model 55 Hemophotometer® (left), a direct reading instrument that makes measurement of hemoglobin in blood easier, faster, surer. It's typical of hundreds of new instruments developed by Fisher engineers to help you do your job more speedily, accurately, conveniently, safely or economically.

Product development is only one facet of Fisher . . . others are briefly described on these pages. Altogether, they are the reason why Fisher is a leader in laboratory instrumentation and reagent manufacture... and your **complete** source for laboratory needs.



Fisher makes what you need: At 116,500-sq.-ft. Indiana (Pa.) plant, craftsmen build Fisher instruments to high standards. Above: Dual-Unit Tissuematon® that automatically processes and stains tissues.

Fisher services your needs . . . from expert instrument repair to aid in lab planning. A Fisher representative helped Shadyside Hospital reuse Fisher modular, interchangeable furniture from former lab in new, larger quarters — saved $4,979.



Fisher stocks what you need for rapid delivery — over 20,000 apparatus items, 7,000 chemicals in 750,000 sq. ft. of warehouse space. Example: stable Drabkin's Dry Mixture for hemoglobin determination.

Want to know more about how Fisher can help you? Full details in free, data-packed bulletins. Just clip, fill out and mail coupon to Fisher Scientific Company, **126** Fisher Building, Pittsburgh 19, Pa.

Fisher Scientific Company
126 Fisher Building
Pittsburgh 19, Pa.

Please send me information on the following:

- ☐ "This Is Fisher"
- ☐ "Drabkin's Dry Mixture"
- ☐ Fisher "Hemophotometer"
- ☐ Fisher "Unitized" Furniture
- ☐ Fisher "Tissuematon"

Please Print

Name_____ Title_____

Company_____

Street_____

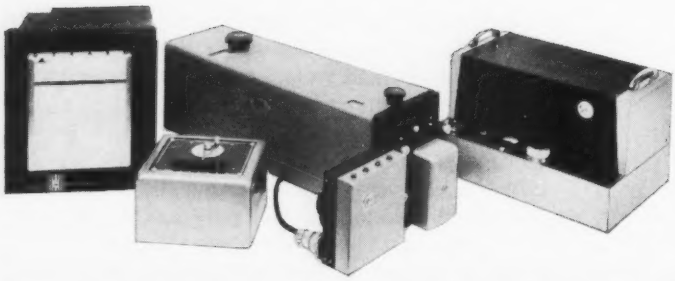
City_____ Zone_____ State_____

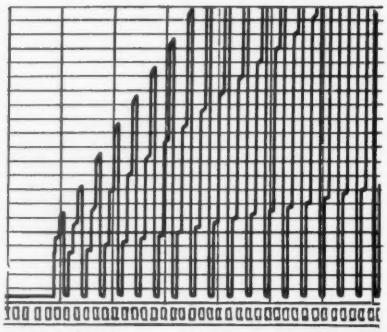
D-163

FISHER SCIENTIFIC

World's Largest Manufacturer-Distributor of Laboratory Appliances & Reagent Chemicals

Boston • Chicago • Fort Worth • Houston • New York • Odessa, Texas
Philadelphia • Pittsburgh • St. Louis • Washington • Montreal • Toronto





A NEW SYSTEM FOR AUTOMATIC RECORDING OF ENZYME KINETICS

Absorbance as a function of time can now be recorded from multiple samples on any laboratory quality spectrophotometer with the Gilford Series 200 Absorbance Recording System. Suitable for the study of kinetic reactions in all regions of the spectrum, the Series 200 is linear with absorbance over a range of 3.0 Optical Density units (1000:1) with sufficient sensitivity to permit scale expansion to .1 Density Units full scale.

Its unusual stability permits accurate, long term recording free from drift and provides a completely automatic system for doing multiple determinations accurately and with a great saving of valuable research time.

The Series 200 System is designed to be attached to the Beckman DU, the Zeiss PMQ II and other spectrophotometers without modification. For complete technical data write:

Gilford

Dept. 2 • **GILFORD INSTRUMENT LABORATORIES INC.** • Oberlin, Ohio

SEE OUR DISPLAY, BOOTH 32 C, ATLANTIC CITY

Make your Convention Reservations at

THE Monterey MOTEL

Pennsylvania at Pacific Ave.
ATLANTIC CITY, N. J.

In the very heart of town
Just one block from CHALFONTE*
HADDON HALL HOTEL

* 78 spacious, beautiful rooms
* FREE TV, HI-FI
* FREE Parking
* Bedside Telephones
* Golf Privileges

RATES: Daily from $6 per person two in room
Single rooms $8

RESERVE NOW

Call ATlantic City 5-3216 or write directly

P.S. . . . only a hop, skip and jump to nearby Convention Hall

PROVEN AND ACCEPTED IN AMERICA'S LEADING RESEARCH AND BREEDING CAGES

SAN-I-CEL

LABORATORY ANIMAL BEDDING

Highly Absorbent	Moisture Controlled
Sterilized	Easy to Use
Granular Cellulose	Uniform Quality
Easy Disposal	Insulates Body Warmth

Available in Regular and Deodor Grades

Write for Free Working Sample—Specify Grade Required

LAUREL FARMS, INC.
White House Station, N. J.

OR

PAXTON PROCESSING CO., INC.
Paxton, Illinois

VISIT US IN BOOTH 71

ONLY LOURDES

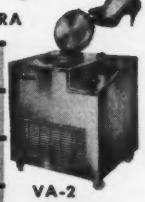
OFFERS GREATEST SELECTION OF SUPERSPEED CENTRIFUGES.. EXACTLY SUITED TO *YOUR* NEEDS!

RCF to 68,000 x G • Most efficient Refrigeration System • Automatic rotor acceleration • Electric Braking • Superspeed vacuum centrifugation • Simplest Continuous Flow System • Unsurpassed capacity.

Select from the industry's widest line of superspeed centrifuges, rotors and accessories.

SOME OF THE MOST POPULAR LOURDES MODELS

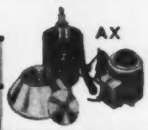
	VA-2	LRA	LCA-1	LCM-1	AA-C	AX
RCF x G	68,000	30,000	36,900	36,900	34,800	34,800
Maximum RPM.	20,000	15,700	17,500	17,500	17,000	16,500
Maximum capacity	3,300 ml.	3,300 ml.	1,620 ml.	2,000 ml.	800 ml.	400 ml.
Rated Hp.	1 Hp.	1 Hp.	½ Hp.	½ Hp.	½ Hp.	½ Hp.
Automatic Acceler.	●	●	●	—	—	—
Electric Brake	●	●	●	—	—	—
Refrigeration	●	●	—	—	—	—
Safety Guard	●	●	●	●	●	—
Automatic Centering	●	●	●	●	●	●
Contin. Flow Accom.	—	●	●	●	●	—
Safety Relay	●	●	●	●	—	—
1 Year Warranty	●	●	●	●	●	●
Price (without rotors)	$3,990	$2,170	$710	$540	$390	$265


LRA

VA-2

LCA-1 LCM-1

AA-C


AX

Visit us at BOOTH Nos. 73–74

LOURDES INSTRUMENT CORP.

Division of Labline, Inc.
656 Montauk Ave., Brooklyn 8, New York

Please send me your latest catalog. FP-31

Name_____

Title_____

Firm or Institution_____

Address_____

City_____ Zone_____ State_____

TECHNICON

AUTOMATIC

VARIABLE

GRADIENT

DEVICE*

produces any buffer requirement in *pH* or concentration for chromatography

Eliminates

DISCRETE BUFFER CHANGEOVERS

as an example . . .

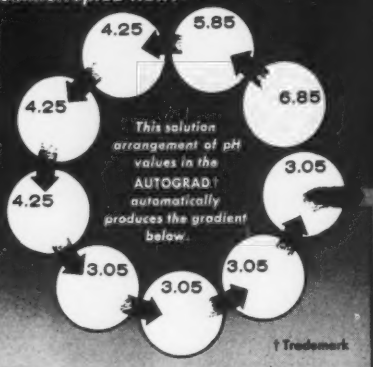
to pH 5.28

to pH 4.25

from pH 3.25 *. . . usual in*

AMINO ACID CHROMATOGRAPHY

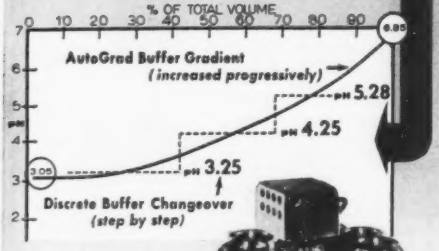
*instead the Autograd automatically supplies a buffer gradient in a continuous, uninterrupted flow.***

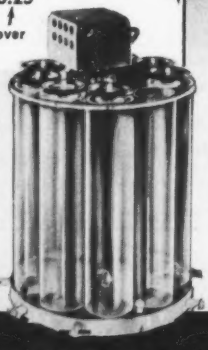


†Trademark

Produces higher Resolution

The Autograd† starts the column elution delivery at *pH* 3.05, as shown above, and progressively in a continuous flow, increases to *pH* 6.85. Not only is each discrete buffer value systematically produced, but the resulting gradient includes *all* of the intermediate values as graphed below.





Developed at the National Cancer Institute, National Institutes of Health, U. S. Department of Health, Education, and Welfare, Public Health Service, Bethesda, Maryland.

***Procedure developed by *Karl A. Piez, National Institute of Dental Research, National Institute of Health.*

*Reference: *"Variable Gradient Device for Chromatography", E. A. Peterson and H. A. Sober, Anal. Chem., Vol. 31, No. 34, May 1959.*

Send for Brochure No. AG and further Data, to:

Technicon Chromatography Corp.
Research Park · Chauncey, New York

News & Notes

Meetings

The *IVth International Congress of Angiology*, organized by the Union Internationale d'Angeiologie of Paris, will be held in Prague, Czechoslovakia, September 4–9, 1961. The leading theme of the Congress is, "The Metabolism of the Vascular Wall." All correspondence should be addressed to the General Secretary of the Congress, Prof. Dr. Z. Reinis, IVth Medical Clinic, Praha 2/499, Czechoslovakia.

The *Seventh International Congress of Neurology* will be held in Rome, September 10–15, 1961, under the auspices of the World Neurologic Federation and the National Institute for Nervous Diseases and Blindness, Bethesda. In conjunction with this meeting, the *Fifth International Congress of Electroencephalography and Clinical Neurophysiology* will be held in Rome, September 7–13, 1961. Information on both these Congresses is obtainable from the President of the Congress, Prof. Mario Gozzano, Viale Università 30, Rome, Italy.

The annual meeting of *The Ohio Academy of Science* will be held at the University of Cincinnati, April 20–22, 1961.

The 1961 session of the *Southern Regional Graduate Summer Session in Statistics* will be held at the Virginia Polytechnic Institute, Blacksburg, Virginia, from June 15 to July 22, 1961. A limited number of fellowships will be available for applicants from specialized areas. Requests for application blanks for the summer session and for fellowships should be addressed to: Dr. Boyd Harshbarger, Head, Department of Statistics, Virginia Polytechnic Institute, Blacksburg, Virginia.

Office of Biological Handbooks

The annual meeting of the *Committee on Biological Handbooks*, Federation of American Societies for Experimental Biology, was held December 2, 1960. The meeting was conducted by the Committee chairman, Dr. Raymund L. Zwemer of the science adviser's office, Department of State.

The Committee members were informed that the current project of the Office of Biological Handbooks, a tabular compilation on "Blood and Other Body Fluids," would be completed early in 1961. A handbook on "Growth" was approved as the next project, and is scheduled for publication in the autumn of 1962. Also, material is being selected by a special advisory committee of educators for a Biology Data Book for student and general use.

The Office of Biological Handbooks is supported by the National Institutes of Health, the National Science Foundation, and the Department of the Air Force.

Request for U. S. Cooperation in UDC Survey

The International Federation for Documentation (FID) is preparing a survey on the world-wide availability and use of

continued on page xcii

NO GROWING PAINS!

with RSCo modular gas chromatographs

You can quickly and easily change to an entirely different system with RSCo modular construction. Insert a detector and power supply for a new detection method, and you'll have the equipment of a whole new system. Add refinements when and where you need them—more sensitive detectors, better regulated power supplies, more stable signal circuits.

Or, for your first investment in gas chromatography, give your laboratory all the advantages of a complete RSCo modular system. Economical conformance to your first needs. Expandability at any time with easily added modules. Progressively greater usefulness because adaptability banishes obsolescence. Highest quality of performance to advance your research projects.

A card or phone call today brings our catalog of nearly thirty top quality RSCo modules. Whether used in combinations of complete systems or in groups of two or three simply to augment your existing system, the RSCo units do outstanding gas chromatography.

RSCo

RESEARCH SPECIALTIES CO.

DEPT. S

200 SOUTH GARRARD BLVD. RICHMOND, CALIFORNIA

NOW AVAILABLE

An Introduction to

THE MATHEMATICS OF MEDICINE & BIOLOGY

By J. G. DEFARES, *Dept. of Physiology, University of Leyden* and I. N. SNEDDON, *Dept. of Mathematics, University of Glasgow.* 663 Pp. $14.00.

For the research worker in the biological sciences and the research minded clinician. In this book very little is assumed to be known. It starts with the definition of the logarithm and the sine, and ends with a technical discussion of partial differential equations and cybernetics. Although the theory of statistics is not included, all the mathematics required for the study of statistics is given.

METHODS IN MEDICAL RESEARCH—

New Vol. 8

A New Volume 8 is now added to this tremendously valuable series. CONTENTS: *Life History of the Erythrocyte; Measurement of Responses of Involuntary Muscle; Peripheral Blood Flow Measurement.* Covers principles, techniques, results, future trends—new equipment and source of supply. *Editor-in-Chief,* H. DAVIS BRUNER, M.D., *Chief, Medical Research Branch, Division of Biology & Medicine, U. S. Atomic Energy Commission.* 366 pages; 60 illus. $9.75.

Available from Medical Book Stores or the Publisher

YEAR BOOK MEDICAL PUBLISHERS, INC.

200 East Illinois Street Chicago 11, Ill.

continued from page xc

information on the Universal Decimal Classification (UDC). In response to their request, the U. S. National Committee is gathering data for the United States. At present, there exists no information center on the UDC in this country; UDC schedules are sold by the American Standards Association.

Any organization or individuals who have made use of the UDC, or who maintain a reasonably complete set of schedules of it for reference, are urged to communicate with Dr. Karl F. Heumann, Secretary, U.S. National Committee for the International Federation for Documentation (FID), in care of the National Academy of Sciences—National Research Council, 2101 Constitution Avenue, N.W., Washington 25, D. C.

The *Section on Pharmacology, International Union of Physiological Sciences* (IUPS), will receive a grant from the National Institutes of Health, Department of Health, Education, and Welfare, for the purpose of paying travel expenses for American scientists to the First International Pharmacological Meeting in Stockholm, August 22–25, 1961. Part of the fund will be assigned for the passages of the invited American participants and of the members of the USA National Committee of IUPS. The rest of the grant will be awarded to those American scientists who have a particular interest in the general program as previously announced. Applications should be made in triplicate to Dr. Carl F. Schmidt, President of the Section on Pharmacology of the IUPS, Dept. of Pharmacology, University of Pennsylvania, School of Medicine, Philadelphia 4, Pa. Please give full name, age, address, nationality, earned degree(s), academic affiliation, membership in any biological society, field of research. Please refrain from applying if you are a holder of any government or private grant which allows travel funds. The deadline is May 1, 1961.

Wyeth Laboratories of Philadelphia has established the *Torald Sollmann Award in Pharmacology* to commemorate the pioneer work in America of Dr. Torald Sollmann in the fields of pharmacological investigation and education. Twenty-five hundred dollars and an appropriate medal will be awarded for a significant contemporary contribution to the advancement and extension of knowledge in the field of pharmacology. The recipient of the Award shall be determined by the members of the Council of the American Society for Pharmacology and Experimental Therapeutics who will act as a Torald Sollmann Award Committee. The first Award will be given at the 1961 Fall Meeting of the Society in Rochester.

Linderstrøm-Lang Memorial Fund

Under the initiative of the Rector and the Governing Board of the University of Copenhagen and the Board of Directors of the Carlsberg Foundation, plans have now been completed for the construction of a Linderstrøm-Lang Memorial Guest House for visiting scientists in Copenhagen. This Center, for which we have been asked to solicit about $150,000, will be occupied by visiting scholars in the natural and humanistic sciences who are associated with the University, the Carlsberg Laboratories, the State Serum Institute and other Danish scientific institutions, and will also serve as a much needed center for scientific symposia and conferences.

Contributions should be made out to the Linderstrøm-Lang Memorial Fund and sent to: Federation of American Societies for Experimental Biology, 9650 Wisconsin Avenue, Washington 14, D. C. The tax-exempt status of contributions has not yet been determined.

continued on page xciv

SUPER-COLD

with EXTRA-FAST PULL-DOWN TIME!

Forma

FRIGID MIDGET

The Frigid-Midget has a cold walled, stainless steel inner work chamber, (fast pull-down time from ambient to −100°F in 1¼ hrs). Air-circulation fan housed in separate compartment with safty perforated grille. Separate switch to cut off air circulation when lid is open.

Inner chamber entirely surrounded by 4½" low K factor insulation . . . Stryofoam used on exterior flat surfaces . . . Special glass wool around heat exchanger . . . Lid double gasketed with silicone rubber for tight seal to neoprene rubber top . . . Controls front-mounted . . . U.E.C. Hydraulic thermostat . . . Temperature Recorder . . . Dial Thermometer, Fan Switch, Line Switch and Pilot Light . . . Access panel for through electrical connections also on front of cabinet.

TEMPERATURE RANGE:—**100°F to ambient. (Other ranges available.)**

Cat. No. F-70493

Overall Dimensions: 24" W. x 38" H. 23" front to back

Inside Dimensions: 12" W. x 12-¾" H. 14" front to back

115 Volts **11 Amps** **60 Cycles**

Each $1600.00

ECONOMICAL

Capable of handling work normally done by far more costly equipment!

VERSATILE

So many uses, no laboratory can afford to be without a Frigid-Midget! These include testing of electronic components, instruments, metal-aging, shrink fitting, tool fitting.

MOBILE

Special added features are its compactness and mobility.

STANDARD SCIENTIFIC SUPPLY CORP. 1888

STANDARD SCIENTIFIC *Supply Corp.*

808 BROADWAY
NEW YORK 3, N.Y.

LABORATORY APPARATUS
REAGENTS AND CHEMICALS

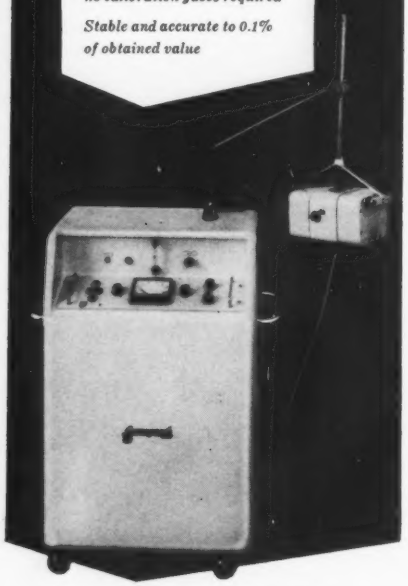
CAPNOGRAPH

For patient monitoring in operating rooms and in respiratory studies.

Linear response from 0 to 8%

Accurate electronic calibration no calibration gases required

Stable and accurate to 0.1% of obtained value



This well tested and widely used infrared gas analysor is recommended for recording dynamic changes in the level of CO_2 in respiration. The response time is rapid (.04 sec.) and is able to follow the respiratory cycle. Alveolar CO_2 values are obtainable without recourse to sampling devices. Measurements are highly stable and accurate to 0.1% of its measuring range, compact and ready for immediate use. The unit is supplied with pumps, calibration, absorbers, and recorder outputs. The CAPNOGRAPH does not require calibration gases. This model is available in floor cabinet or condensed version.

Write for additional information

INSTRUMENTATION ASSOCIATES, INC.

Distributors of Laboratory and Scientific Specialties

17 West 60th Street

New York 23, N.Y.

Books and Journals Received

AEROSPACE MEDICINE AND BIOLOGY. An annotated bibliography. Jacobius, Kenk, Marrow, Plavnieks, Voulgaris & Davis. Available from: Office of Technical Services, U. S. Dept. of Commerce, Wash. 25, D. C., 1960. 542 pp. $6.00

AN INTRODUCTION TO THE BIOLOGY OF MICRO-ORGANISMS. Hawker, Linton, Folkes and Carlile. New York: St. Martin's Press, 1961. 452 pp. $6.75

BIOLOGY OF PYELONEPHRITIS. Editors: Edward L. Quinn and Edward H. Kass. Boston: Little, Brown & Co., 1960. 708 pp. $18.00

CHEMOBIODYNAMICS AND DRUG DESIGN. F. W. Schueler. New York: McGraw-Hill Book Co., Inc., 1960. 638 pp. $19.50

CLINICAL APPLICATIONS OF CARDIOPULMONARY PHYSIOLOGY. M. Henry Williams, Jr. New York: Paul B. Hoeber, Inc., Medical Division of Harper & Brothers, 1960. 233 pp. $16.00

CONFERENCE OF BIOLOGICAL EDITORS, COMMITTEE ON FORM AND STYLE. 1960. Style manual for biological journals. Am. Inst. Biol. Sci. Washington. 92 pp. $3.00

CONGENITAL MALFORMATIONS. G. E. W. Wolstenholme and Maeve O'Connor, Editors for Ciba Foundation. Boston: Little, Brown & Co., 1960. 308 pp. $9.00

CONGENITAL MALFORMATIONS OF THE HEART. Revised Edition—Vol. I. Helen B. Taussig. Cambridge, Mass.: Harvard University Press, 1960. 204 pp. $5.75

CONGENITAL MALFORMATIONS OF THE HEART. Revised Edition—Vol. II. Helen B. Taussig. Cambridge, Mass.: Harvard University Press, 1960. 1049 pp. $17.50

DIETARY PROTEINS IN HEALTH AND DISEASE. Allison & Fitzpatrick. Springfield, Ill.: Charles C Thomas, 1960, 86 pp. $4.50

HAEMOPOIESIS—Cell Production and its Regulation. G. E. W. Wolstenholme and Maeve O'Connor, Editors for the Ciba Foundation. Boston: Little, Brown & Co., 1960. 490 pp. $11.00

HENDERSON'S DICTIONARY OF SCIENTIFIC TERMS. Seventh Edition. John H. Kenneth. New Jersey: D. Van Nostrand Co., Inc., 1960. 595 pp. $12.50

HUMAN PITUITARY HORMONES. G. E. W. Wolstenholme and Cecilia M. O'Connor, Editors for the Ciba Foundation. Boston: Little Brown & Co., 1960. 336 pp. $9.50

INTERNATIONAL REVIEW OF TROPICAL MEDICINE. Volume I. Edited by: David Richard Lincicome. New York: Academic Press Inc., 1960. 300 pp. $10.00

NEMATOLOGY. J. N. Sasser and W. R. Jenkins, Editors. Chapel Hill, N.C.: The University of North Carolina Press, 1960. 480 pp. $12.50

PRINCIPLES OF ANIMAL TAXONOMY. George Gaylord Simpson. New York: Columbia University Press, 1961. 247 pp. $6.00

RADIATION PROTECTION AND RECOVERY. Edited by Alexander Hollaender. New York: Pergamon Press, 1960. 392 pp. $12.50

SYMPOSIUM—CARBON DIOXIDE & MAN. (Journal of Anesthesiology, Nov.-Dec. 1960) James E. Eckenhoff, Editor. Lancaster, Pa. $2.00

THE BIOLOGICAL ROLE OF RIBONUCLEIC ACIDS. Jean Brachet. Amsterdam: Elsevier Publishing Company, 1960. (U. S. Distributors: D. Van Nostrand Co., Inc., Princeton, N. J.) 144 pp. $7.50

THE GLYCOLYSIS AND RESPIRATION OF TUMORS. Alan C. Aisenberg. New York: Academic Press Inc., 1960. 224 pp. $8.00

THE INTEGRATIVE ACTION OF THE NERVOUS SYSTEM. Sir Charles Sherrington. New Haven, Conn.: Yale University Press, 1961. (paperbound) 413 pp. $1.95

SCANDINAVIAN RESEARCH GUIDE, Volume I. Directory of Research Institutions within Technology and Science Exclusive of Life Sciences. Norway: Scandinavian Council for Applied Research. 687 pp. $10.00

SCANDINAVIAN RESEARCH GUIDE, Volume II. 486 pp. $10.00

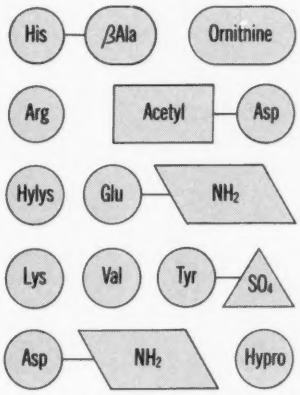
THE TRANSPLANTATION OF TISSUES AND ORGANS. Michael F. A. Woodruff. Springfield, Ill.: Charles C Thomas, 1960. 777 pp. $25.50

Amino acid analysis

... quantitative analysis in 24 hours for the twenty amino acids in protein hydrolyzates ... in 50 hours for the free amino acids and related compounds in physiological fluids.

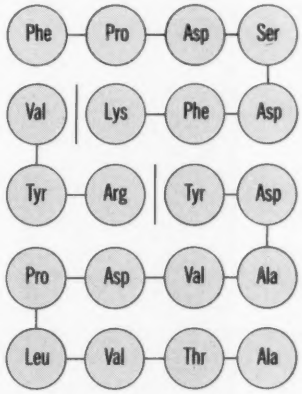
Amino acid isolation

... separation, collection, and identification of amino acids and related compounds in physiological fluids and tissue and plant extracts on both analytical and preparative scale.



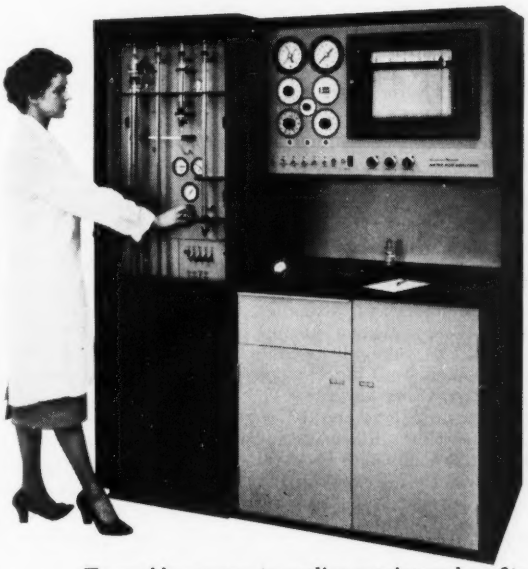
Peptide isolation

... separation, collection, and identification of peptides on both analytical and preparative scale.



MODEL 120 AMINO ACID ANALYZER DOES ALL THREE...

automatically!



To enable owners to realize maximum benefits from the Model 120, Spinco Division now offers regularly scheduled operator training sessions. These are comprehensive courses covering operation of the instrument, the chemistry involved and advanced techniques. We will be happy to send you the curriculum and schedule.

With the addition of new accessories, the 120 Analyzer has become an even more valuable time-saving tool for the biochemist. Large-bore columns allow preparative runs on mixtures of peptides or amino acids. A versatile new valving system and an accessory stream divider pump permit part of the column effluent to be analyzed colorimetrically, while diverting the main flow either to an external fraction collector, through a scintillation counter, or both.

Whether your work involves analyzing protein hydrolyzates, physiological fluids, tissue extracts, foods, culture media, or pharmaceuticals, this versatile instrument can take over much of the routine of repetitive peptide and amino acid analyses.

For latest information on the Model 120 Analyzer, and its new accessories, write Beckman Instruments, Inc., Spinco Division, Stanford Industrial Park, Palo Alto, California, and ask for Data File 120-6.

Beckman® / **Spinco Division**
Beckman Instruments, Inc.

5-76A

SALES AND SERVICE FACILITIES ARE MAINTAINED BY BECKMAN/INTERNATIONAL DIVISION IN FIFTY COUNTRIES

IMPROVED PERFORMANCE—WITHOUT INCREASED COST—
NOW AVAILABLE IN NEW SANBORN SYSTEMS DESIGNED SPECIFICALLY FOR BIOPHYSICAL RESEARCH

For recording up to four physiologic phenomena simultaneously—two new Sanborn systems offer all the benefits, operating advantages and improved performance of modern electronic components and instrument design. Signals to each system are fed through versatile, highly developed interchangeable preamplifiers available in ECG/General Purpose, Carrier, Low Level, Heart Sound and other types. Both vacuum tubes and transistors are used in the Preamplifiers, depending on the best component for the particular circuit. Additional reliability is obtained through the use of printed wiring boards and other electronic advances. Recorders in each system are also of improved design.

Series "964" direct writing (heated stylus) *system* has frequency response to 125 cps, horizontal chart movement for easy viewing and notations, nine chart speeds from 0.25 to 100 mm/sec.

Series "564" photographic system has identical preamplifiers and packaging. It features five chart speeds, simplified controls for easy operation, and 500 cycle galvanometers for recording phenomena beyond the response range of a direct writer. Other advantages include wide scale deflection (up to 15 cm) and ability to overlap traces.

For complete information call the nearest Sanborn Branch Office or Service Agency — or write Manager, Research Instrument Sales, Medical Division.

MEDICAL DIVISION
SANBORN COMPANY
175 Wyman St., Waltham 54, Massachusetts

INDEX OF ADVERTISERS

Advertising Representative:
Steven K. Herlitz, Inc., 280 Madison Avenue, New York 16, New York

	Page
Academic Press, Inc.	lxv, lxvi, lxvii, lxviii
Acme Metal Products, Inc.	xvi*
Alconox, Inc.	xxix*
Allied Chemical	vii
Allied Mills, Inc.	xliv*
Aloe Scientific	xv*
American Electronics Labs., Inc.	xxi*, xlviii
American Optical Company	xlv*
American Sterilizer	xix
The American Tobacco Company	Cover II
Anders Beckman (LKB Instruments)	xxii
H. Reeve Angel & Company	xxxiii*, ix
Animatic Animal Care Products, Inc.	x*, xlix
Annual Reviews, Inc.	xxiii
Atomic Accessories, Inc.	lxxxii
Baird-Atomic, Inc.	xxxi*
Bay Histology Service	xxxvi*
B-D Laboratories, Inc.	xxiv
Bethlehem Apparatus Company, Inc.	xxviii*
Brinkmann Instruments, Inc.	lv
Buchler Instruments, Inc.	xxvii*
Burgess Publishing Company	lxxx
Camm Research Institute, Inc.	xxi*, lviii
Carworth Farms, Inc.	xxxix*
The Charles River Breeding Labs.	xxiv*
Chemical and Pharmaceutical Industry Co., Inc.	lviii
Clay-Adams, Inc.	xxxi
The Coca-Cola Company	lxxviii
Coleman Instruments, Inc.	xxvii
Commissariat à l'Energie Atomique France	xli*
Corning Glass Works	lix
Coulter Electronics	lxxv
Custom Engineering and Development Co.	lxx
Delmar Scientific Laboratories	lxxiii
E & M Instrument Co., Inc.	xxv
Eaton Laboratories	Cover II*
Eberbach Corporation	lxxiv
Erie Scientific	liv
Farmochimica Cutolo-Calosi S.p.A. (F.C.C.)	xxiv*
Federation Notice	xxxii*
Fisher Scientific	lxxxvi, lxxxvii
Fiske Associates, Inc.	xii*
General Laboratory Supply Company	xiv
Gilford Instrument Laboratories, Inc.	lxxxviii
Gilson Medical Electronics	xlvi*
Grass Instrument Company	xiii*, lxii
Grune & Stratton, Inc.	xxvi
Harford Metal Products, Inc.	xlvi*
Harvard Apparatus Co., Inc.	lxix
Industrial Systems Company	xlviii
Instrumentation Associates	xl, lxxx, xciv
International Equipment Co.	xvi*, xvii*
Interscience Publishers, Inc.	xxxv
Isotopes Specialties Co.	xxxviii*
Johnson Reprint Corporation	xxviii
K & K Laboratories, Inc.	lxxx
Keystone Plastics Company	viii
Chas. B. Knox Gelatine Co., Inc.	xlv
David Kopf Instruments	xviii
Labline, Inc.	xvii
LaPine Scientific Company	xxxvii*
Lea & Febiger	xl
E. Leitz, Inc.	xxiii*
Linbro Chemical Co., Inc.	xi
The London Company	viii*, lxi
Lourdes Instrument Corp.	lxxxix
The Macmillan Company	iv*
Mann Research Laboratories, Inc.	Cover III*, Cover III
Metalwash Machinery Corporation	xliv*
Mettler Instrument Corporation	xxii*
Millipore Filter Corporation	xxi
Monterey Motel	lxxxviii
The C. V. Mosby Company	xliii
The Nalge Co., Inc.	lxxxi
National Instrument Laboratories, Inc.	xiv*, l, li
nestor/faust	xvi
New England Nuclear Corp.	i*, xviii*, lxix
Nuclear-Chicago Corporation	xlvi, xlvii
Nuclear Measurements Corp.	xii
Nutritional Biochemicals Corp.	iii*
Optica, Inc.	xxx*
Oxford University Press	lxxii
Owens-Illinois	liii
Pabst Laboratories	vi
Packard Instrument Company, Inc.	Cover IV*, Cover IV
Paxton Processing Co., Inc.	lxxxviii
Pergamon Press, Inc.	xxxiv*
Picker Nuclear	xxxix
Placement Service	xliv*, xxxviii, lii
Plasticsmith, Inc.	xxxv*
Porter Mathews Company, Inc.	xxxvi, xxxvii
Precision Scientific Co.	xlvii*
Radiation Counter Laboratories, Inc.	xxxiii
Radiation Equipment & Accessories Corporation	lxxi
Radio Corporation of America	xv
Ralston Purina Company	xx
Reinhold Publishing Corporation	lii, lxxxiii
Research Specialties Co.	vi*, xci
The Ronald Press Company	xxv*
Sanborn Company	xcvi
W. B. Saunders Company	ix*, lx
Schueler & Company	xliii*

continued on next page

continued from page xcvii

Schwarz BioResearch, Inc. . . . xxxvi*
Science Materials Center . . . xxxviii
Scientific Glass Apparatus Co., Inc. . . . lxiii
Scientific Industries, Inc. . . . xxx*, xxx, lxxiv
Scientific and Process Div. of Beckman Instruments . . . lxxvi, lxxvii
Scientific Products Div. of American Hospital Supply Corp. . . . vii*
Sigma Chemical Company . . . xxvi*, lxiv
Ivan Sorvall, Inc. . . . xix*, xxxiv
Spinco Div., Beckman Instruments . . . xcv
A. E. Staley Manufacturing Co. . . . iii
Standard Scientific Supply Corp. . . . xciii
Joseph E Stocker . . . xlviii
C. H. Stoetling Co. . . . xxiv*
Style Manual . . . xlii*, xxx

Taconic Farms . . . xl
Technical Associates . . . lxxxv
Technical Measurement Corporation . . . xl*
Technicon Chromatography Corp. . . . xviii*, xxviii*, lviii, xc
The Technicon Company . . . xlviii*

Technicon Controls, Inc. . . . xii*, xvi
Technicon Instruments Corp. . . . xxi*, xxxii

Arthur H. Thomas Company . . . i
Charles C Thomas Publisher . . . iv
Tracerlab . . . lv, lvi, lvii
Tri-R Instruments . . . xliv

The VirTis Co., Inc. . . . xli, xlii

Geo. H. Wahmann Mfg. Co. . . . xxxii
Warner-Chilcott, General Diagnostics Division . . . v*, xx*, xxix, lxxxiv
The Waters Corporation . . . lxxix
John Wiley & Sons, Inc. . . . xiii
Wilkens-Anderson Co. . . . xxvi
Will Corporation . . . xxxviii
Worthington Biochemical Corporation . . . xi*, lxxi

The Year Book Publishers, Inc. . . . xcii
Yellow Springs Instrument Co., Inc. . . . x

F. J. Zeehandelaar, Inc . . . xxxvi*
Carl Zeiss, Inc. . . . v

* Advertising in the Abstracts Section, Part I

PROGRAM

Forty-fifth Annual Meeting

FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY

CONTENTS

	Page
General Information	455
Federation Joint Session	477
Motion Pictures	477
Intersociety Sessions	457, 478, 501, 523, 543
Physiology Sessions	461, 482, 504, 526, 547
Biochemistry Sessions	465, 486, 508, 529, 551
Pharmacology Sessions	468, 491, 514, 534, 554
Pathology Sessions	470, 494, 517, 537, 556
Nutrition Sessions	472, 496, 519, 539, 557
Immunology Sessions	474, 498, 521, 541, 558
Directory of Exhibitors	560
Author Index	i
Index of Advertisers	xcvii
News and Notes	xc
Directory of Special Meetings and Functions	double spread

SYMPOSIA AND SPECIAL SESSIONS

Session	*Day*		*Page*
Joint Session			
Approaches to Study of Disease	Tues.	7:45 P.M.	477
Intersociety Sessions			
Effects of Hallucinogenic Drugs in Man	Mon.	P.M.	459
Viruses and Neoplasia	Tues.	A.M.	478
The Hemicholiniums	Tues.	A.M.	478
Gastroenterology	Wed.	P.M.	502
Care and Use of Laboratory Animals	Thurs.	A.M.	523
Lipid Metabolism	Fri.	P.M.	544
Physiology			
Physiological Training for Clinical Investigators	Wed.	A.M.	504
Computer Technics in Physiology	Fri.	A.M.	547
Biochemistry			
Topics of Current Interest in Biochemistry	Mon.	A.M.	465
Mechanism of Action of Coenzymes	Mon.	A.M.	465
Structure and Function of Peptide Hormones	Mon.	A.M.	465
Regulation of Metabolism	Fri.	P.M.	553
Nutrition			
Biological Role and Mechanism of Action of Vitamin K	Wed.	P.M.	519
Nutritional Significance of Selenium (Factor 3)	Thurs.	P.M.	539

Forty-fifth annual meeting

ATLANTIC CITY, NEW JERSEY, APRIL 10–14, 1961

Registration

Registration desks located in the Lobby, Convention Hall, will open at noon on Sunday, April 9, and will remain open as follows:

Sunday, April 9: 12:00 noon to 11:00 P.M.

Monday through Thursday, April 10–13: 8:00 A.M. to 5:00 P.M.

Friday, April 14: 8:00 A.M. to 3:00 P.M.

The registration fee is $10.00. The official registration badge must be worn to secure admission to all scientific sessions, the Placement Service, and other Federation activities.

There will be separate registration desks for non-professional guests who may not wish to attend scientific sessions and for industrial exhibitors and representatives of the press.

Registration for wives will be located in the Founders Room (Women's Hospitality Lounge), Dennis Hotel, on Monday and Tuesday, April 10–11, from 9:00 A.M. to 5:00 P.M. Registration fee, $1.00. After Tuesday, women guests will register in the Lobby, Convention Hall.

Headquarters Hotels

Headquarters hotels will be the Traymore (Physiology); Ambassador (Biochemistry and Nutrition); Dennis (Pharmacology); Ritz-Carlton (Pathology); Shelburne (Immunology). Send requests for accommodations to: 1961 Federation Meeting, Housing Bureau, 16 Central Pier, Atlantic City, New Jersey.

Federation Office

The Federation Office will be in Room 8, Convention Hall. The Office will be open on Sunday, April 9, from 9:00 A.M. until 6:00 P.M. Office hours Monday through Friday will be 8:00 A.M. to 6:00 P.M. Emergency calls after 6:00 P.M. should be directed to the Federation Convention Manager, Mrs. Helena Lemp, Shelburne Hotel. Federation switchboard: 344-8151.

Scientific Sessions

Scientific sessions will be held in Convention Hall and in the Ambassador, Dennis, Ritz-Carlton, Shelburne, and Traymore Hotels. A complete condensed program of the sessions showing their location is printed on the double-page spread at the end of the Program.

Sessions will begin promptly at 9:00 A.M. on Monday and continue through Friday afternoon. Afternoon sessions will start at 1:30 P.M., Monday through Thursday, and at 1:00 P.M. on Friday.

Intersociety sessions have been scheduled from Monday morning through Friday afternoon. Topics of these sessions are: Atherosclerosis, Blood Clotting, Cell and Tissue Culture, Cytology, Endocrinology, Gastroenterology, Muscle Chemistry, and Neuropharmacology.

The following intersociety symposia have been scheduled: Effects of Hallucinogenic Drugs on Man, Gastroenterology, The Hemicholiniums, Lipid Metabolism, Use and Care of Laboratory Animals, and Viruses and Neoplasia.

See pages 459, 478, 502, 523, 544 for complete programs of these sessions.

Scientific sessions are listed in the Program by days of the week, and sub-divided by Society.

Joint Session

The Joint Session of the Federation, presenting speakers on the topic "Approaches in Pathology to Problems of Disease," will be held on Tuesday evening, April 11, at 7:45 P.M. in the Ballroom, Convention Hall. The Chairman will be Cyrus C. Erickson, University of Tennessee. See page 477 for complete program.

Motion Pictures

Motion pictures will be shown continuously, theater style, for three days, Tuesday through Thursday, 9:00 A.M. to 5:00 P.M., in Room D, Main Arena Floor, Convention Hall. Each movie will be repeated a number of times during the week.

Abstracts and Programs

Copies of FEDERATION PROCEEDINGS, March 1961 (Part I—Abstracts, Part II—Program) will be on sale in the registration area, Lobby, Convention Hall. Abstracts are priced at $5.00, and Programs at $2.00 per copy.

Analysis of Attendance

Each registrant will be given, at the registration desks, 1) a colored badge case denoting Society of major interest, and 2) a business reply post card on which he is asked to record the Program numbers of all sessions he attends. Sessions are numbered con-

secutively in BOLDFACE in the Program. Post cards should be mailed upon departure from Atlantic City.

The purpose of colored badges and post cards is to make possible an analysis of the variety of sessions attended, and particularly of the cross-overs among the sessions of different Societies. These data will implement important studies of the structure and organization of the Annual Meeting. All registrants are asked to cooperate fully in this one-year experiment.

Other Meetings

The American Society for Artificial Internal Organs will hold scientific sessions on Sunday and Monday, April 9 and 10, in the Ballroom of the Ritz-Carlton Hotel. A listing of these sessions is given in the double-page spread. Those desiring to attend the meetings should register at the Federation registration desk.

Federation Committees and Society Council Meetings

The Federation Board, Federation Committees, and the Councils and Committees of the various Societies have scheduled meetings during the week, beginning on Saturday, April 8, and Sunday, April 9. Consult the double-page spread for information on these meetings.

Society Business Meetings

Society business meetings are scheduled for Tuesday and Thursday afternoons, with the exception of Nutrition which will meet on Monday afternoon and Thursday morning. See program of each Society or the double-page spread for time and location.

Society Coffee Lounges

Each Society will maintain a coffee lounge for members and non-members, to be open from 8:30 A.M. to 5:00 P.M., Monday through Friday. Lounges will be located in the Society's headquarters hotel with the exception of the Biochemistry Lounge which will be in Room C, Main Arena Floor, Convention Hall. An Intersociety Coffee Lounge will be located in Room E, Main Arena Floor, Convention Hall.

Placement Service

The Federation Placement Service will be located on the Main Arena Floor, Convention Hall. It will be open for candidate registration on Sunday, April 9, from 1:00 to 5:00 P.M. Registration of employers will begin on Monday, April 10, at 8:15 A.M. The Placement Service will be open from 8:15 A.M. to 5:00 P.M., Monday through Thursday. Interviews will be scheduled Tuesday through Thursday during the hours listed above. The Bulletin Board Room will remain open until 6:00 P.M., Monday through Thursday.

Employers who wish to use the interview facilities at Atlantic City must be annual subscribers to the Placement Service or subscribe to the February List of Candidates. Identification forms were mailed to such subscribers on March 15. Up to three identification cards can be issued for each subscription. If the above forms are completed and returned to the Washington office before March 31, the cards identifying the authorized users of each subscription will be awaiting them at the Employers' Registration Desk in Atlantic City.

To use Placement Service facilities, *both* employers and candidates must pay the registration fee for the Annual Meeting and also be registered with the Placement Service.

Press Room

The Press Room will be located in Room 9, Convention Hall. The office will open at 9:00 A.M., Saturday, April 8. Dr. Robert B. Jennings, Chairman of the Federation Public Information Committee, has arranged for members of his Committee to assist press representatives in securing press releases and arranging press conferences. Dr. Sidney S. Negus, Director of Public Information for the Annual Meeting, will be in charge of the Press Room.

Exhibits

Industrial and institutional exhibits will be located on the Main Arena Floor, Convention Hall. Inspection periods will be as follows: Monday, April 10, 8:00 A.M. to 5:00 P.M.; Tuesday, April 11 through Friday, April 14, 8:45 A.M. to 5:00 P.M. A floor plan of the exhibits area and a list of exhibitors, with a brief description of displays, will be found on the green pages.

The official registration badge must be worn to gain admission to the exhibits.

Special Functions

Special meetings, dinners, luncheons, group breakfasts, and other informal functions which have been scheduled through the Federation Office are listed in the double-page spread.

Tickets for special functions will be on sale in the registration area, Lobby, Convention Hall. Hours: Sunday, 12:00 noon to 11:00 P.M.; Monday through Thursday, 8:00 A.M. to 5:00 P.M.

Special Film Showing

The American Institute of Biological Sciences will show three films of interest to Federation members on Monday, April 10, at 3:00 P.M., Room D, Main Arena Floor, Convention Hall. Films are from the series of 120, sponsored and developed by AIBS, which constitute a complete high school biology course. An AIBS representative will be present. Scheduled are: 3:00 P.M.—"The Very Small" (an introduction to microbiology); 3:45 P.M.—"Virus"; 4:30 P.M.—"The Germ Theory".

Continued on page 476

Monday, April 10

Intersociety Sessions—Monday, 9:00 a.m.

1. Cytology I

MON. A.M.—CONVENTION HALL, ROOM F

Chairmen: R. E. Stowell; S. P. Kent

9:00 **1.** Ultrastructural changes in contact dermatitis in the guinea pig. MARTIN H. FLAX AND JAMES B. CAULFIELD.* *Massachusetts Gen. Hosp. and Harvard Med. Sch.* (Pathol.)

9:15 **2.** Morphological and cytochemical correlation of rat liver cell organelles in subacute ethionine intoxication and modifications. D. D. ANTHONY,* F. SCHAFFNER AND F. HUTTERER.* *Mt. Sinai Hosp., New York.* (Pathol.)

9:30 **3.** Early changes in the fine structure of hepatocytes in β-3-thienylalanine fed rats. Z. HRUBAN,* H. SWIFT* AND R. W. WISSLER. *Univ. of Chicago.* (Pathol.)

9:45 **4.** Changes in cellular mass by interference microscopy. BJARNE PEARSON AND FRED GROSE.* *Wayne State Univ.* (Pathol.)

10:00 **5.** Ultrastructure and function of the rat fetal thyroid. JOSEPH D. FELDMAN AND STANLEY M. KURTZ.* *Univ. of Pittsburgh.* (Pathol.)

10:15 **6.** Water transport in experimental hydration and dehydration: an electron microscopic study. SARAH A. LUSE. *Washington Univ.* (Pathol.)

10:30 **7.** Mucins in tissue sections using the fluorescent antibody technique. I. Preparation and specificity of bovine submaxillary gland mucin antibody. SIDNEY P. KENT. *Univ. of Alabama.* (Pathol.)

10:45 **8.** Fine structure of bone cells. H. ROBERT DUDLEY* AND DAVID SPIRO.* *Massachusetts Gen. Hosp. and Harvard Med. Sch.* (Pathol.)

11:00 **9.** Electron microscopy of post-lactational cytolysis of mouse mammary gland. S. R. WELLINGS* AND K. B. DEOME.* *Univ. of California.* (Pathol.)

2. Gastroenterology I

MON. A.M.—CONVENTION HALL, ROOM G

Chairmen: S. C. Sommers; R. A. MacDonald

9:00 **10.** Potassium in mecholyl-stimulated gastric secretion in dogs. J. LAWRENCE WERTHER* AND FRANKLIN HOLLANDER. *Mount Sinai Hosp., New York.* (Pathol.)

9:15 **11.** Admixture of endogenous protein with ingested protein in digestive tracts of dogs and rats. E. S. NASSET AND JIN SOON JU.* *Univ. of Rochester.* (Physiol.)

9:30 **12.** Xylose absorption and urinary excretion in thyroid disease. S. A. BROITMAN,* D. C. BONDY,* L. C. HOSKINS,* I. YACHNIN* AND N. ZAMCHECK. *Boston Univ.* (Pathol.)

9:45 **13.** Metabolism of ricinoleic acid in rat and man. W. C. WATSON,* R. S. GORDON, JR. AND A. KARMEN.* *Natl. Insts. of Health.* (Physiol.)

10:00 **14.** Distribution of I^{131} polyvinylpyrrolidone in humans after oral and intravenous administration. A. B. FRENCH, A. I. RAGINS,* H. M. POLLARD* AND B. DICKASON.* *Univ. of Michigan.* (Physiol.)

10:15 **15.** Active transport of amino acids by hamster intestine. E. C. C. LIN,* H. HAGIHIRA* AND T. H. WILSON. *Harvard Med. Sch.* (Physiol.)

10:30 **16.** Effect of long-term neomycin therapy on small bowel function and histology. ROGER G. METCALF,* VICTOR C. BRUM* AND IRVING J. POLINER.* *VA Hosp., Togus, Maine.* (Pathol.)

10:45 **17.** Structural and transport changes in mucosa of the small bowel during niacin deficiency in dogs. RALPH A. NELSON,* CHARLES F. CODE AND ARNOLD L. BROWN, JR. *Mayo Clinic and Mayo Fndn.* (Pathol.)

11:00 **18.** Fatty acid activation and glyceride synthesis by subcellular particles of rat intestinal mucosa. JOHN R. SENIOR* AND KURT J. ISSELBACHER. *Massachusetts Gen. Hosp. and Harvard Med. Sch.* (Biochem.)

11:15 **19.** 5-Hydroxytryptamine content of gastrointestinal mucosa. GERTRUDE M. TYCE,* GEORGE H. C. STOBIE* AND JESSE L. BOLLMAN. *Mayo Fndn. and Mayo Clinic.* (Pathol.)

3. Neuropharmacology I

MON. A.M.—CONVENTION HALL, ROOM A

Chairman: W. M. Booker

9:00 **20.** Spectrofluorimetric determination of phenothiazine tranquilizers in biological samples. JAMES B. RAGLAND* AND JOHN KINROSS-WRIGHT.* *Baylor Univ. and Houston State Psychiat. Inst.* (Biochem.)

9:15 **21.** Estimation of serotonin from acetone solution. J. C. TOWNE*, E. FENSTER* AND T. SCHAEFER.* *VA Res. Hosp., Northwestern Univ. and Univ. of Chicago.* (Biochem.)

9:30 **22.** Metabolism of 5-hydroxytryptophan. AARON FELDSTEIN,* KEITH K. WONG* AND HARRY FREEMAN.* *Worcester Fndn. for Exper. Biol. and Medfield State Hosp.* (Physiol.)

9:45 **23.** Effect of drugs on uptake of circulating H^3-norepinephrine by tissues. G. HERTTING,* J. AXELROD, G. WHITBY* AND R. PATRICK.* *Natl. Inst. of Mental Health.* (Pharmacol.)

10:00 **24.** Factors affecting extension of hexobarbital effect by anticholinesterases. C. D. PROCTOR, S. A. RIDLON,* J. J. FUDEMA* AND V. G. PRABHU.* *Loyola Univ.* (Pharmacol.)

10:15 **25.** Inhibitory effect of psilocybin and related compounds on human cholinesterases. E. K. ZSIGMOND,* F. F. FOLDES AND V. M. FOLDES.* *Mercy Hosp. and Univ. of Pittsburgh.* (Pharmacol.)

10:30 **26.** Dephosphorylation and oxidation of psilocybin

and psilocin by mammalian tissue preparations. A. HORITA AND L. J. WEBER.* *Univ. of Washington.* (Pharmacol.)

10:45 **27.** Effect of psychotropic compounds on enzyme systems. VERA USDIN* AND EARL USDIN.* *New Mexico Highland Univ.* (Biochem.)

11:00 **28.** Effect of an organophosphorous inhibitor on incorporation of C^{14}-lysine into the proteins of rat brain. DORIS H. CLOUET* AND H. WAELSCH. *New York State Psychiatric Inst. and Columbia Univ.* (Pharmacol.)

11:15 **29.** Cerebral metabolism of DL-ornithine (2-C-14) in vivo. JOHN W. KEMP* AND DIXON M. WOODBURY. *Univ. of Utah.* (Pharmacol.)

11:30 **30.** Distribution of homocarnosine in animal tissues. D. ABRAHAM,* J. PISANO* AND S. UDENFRIEND. *Natl. Heart Inst.* (Pharmacol.)

11:45 **31.** Effect of ammoniagenic coma on levels of free amino acids in the brain. G. J. WRIGHT,* F. NAVAZIO* AND M. K. HORWITT. *Elgin State Hosp.* (Biochem.)

4. Action of Insulin

MON. A.M.—CONVENTION HALL, ROOM 20

Chairman: S. B. Barker

9:00 **32.** Paradoxical effect of insulin upon isolated perfused rabbit liver. G. J. MOURATOFF,* N. V. CARROLL,* P. C. GABBERT* AND R. C. BATTERMAN. *Inst. for Clinical Pharmacol. and Med. Res. and Letterman Gen. Hosp.* (Pharmacol.)

9:15 **33.** Hepatic glycogenolysis following insulin hypoglycemia. J. S. BISHOP,* R. STEELE, N. ALTSZULER,* A. DUNN* AND R. C. DE BODO.* *New York Univ. Sch. of Med. and Brookhaven Natl. Lab.* (Biochem.)

9:30 **34.** Role of gluconeogenesis and glycogenolysis in response to insulin-induced hypoglycemia. A. DUNN, R. STEELE,* N. ALTSZULER, J. S. BISHOP* AND R. C. DE BODO. *New York Univ. Sch. of Med. and Brookhaven Natl. Lab.* (Physiol.)

9:45 **35.** Prevention of phloridzin hypoglycemia with insulin. M. S. GOLDSTEIN, B. METZGER* AND S. BERGER.* *Michael Reese Hosp.* (Physiol.)

10:00 **36.** Glucose-reversible hypoglycemia induced in mice by intraperitoneal injection of thermophilic algae. J. HUNTER* AND D. BURK. *Natl. Cancer Inst.* (Biochem.)

10:15 **37.** Stimulation of phosphate uptake by insulin and its relation to sugar transport in perfused rat heart. H. KAJI* AND C. R. PARK. *Vanderbilt Med. Sch.* (Physiol.)

10:30 **38.** Transport of sugars across rat diaphragm; action of insulin. G. UNGAR AND S. PSYCHOYOS.* *U. S. Vitamin and Pharmaceut. Corp.* (Physiol.)

10:45 **39.** Glucose dependence of effect of insulin on incorporation of amino acid carbon into trichloracetic acid precipitable protein of rat adipose tissue. B. M. CARRUTHERS* AND A. I. WINEGRAD.* *George S. Cox Med. Res. Inst. and Univ. of Pennsylvania.* (Physiol.)

11:00 **40.** Incorporation of glucose carbon into protein of giant islets of toadfish (opsanus tau). R. E. HUMBEL,* K. W. TAYLOR* AND A. E. RENOLD. *Harvard Med. Sch.* (Physiol.)

11:15 **41.** Insulin on frog gastric mucosa. W. REHM, H. SCHUMANN* AND E. HEINZ. *Univ. of Louisville and Goethe Univ., Frankfurt, Germany.* (Physiol.)

5. Blood Clotting I

MON. A.M.—SHELBURNE, CORAL REEF ROOM

Chairmen: J. B. Graham; J. H. Lewis

9:00 **42.** Labile factor (factor V) in serum. ARMAND J. QUICK. *Marquette Univ. Sch. of Med.* (Biochem.)

9:15 **43.** Proteolytic, thromboplastic, and other interactions in activation of factors II (prothrombin), V, VII, X. LIBERTO PECHET* AND BENJAMIN ALEXANDER. *Beth Israel Hosp., and Harvard Univ.* (Biochem.)

9:30 **44.** Increased factor VII activity resulting during intrinsic coagulation. CHARLES L. JOHNSTON, JR. AND PETER F. HJORT.* *Univ. of North Carolina and Rikshospitalet, Oslo.* (Physiol.)

9:45 **45.** Development of an anticoagulant following intravenous thromboplastin in the dog. JESSICA H. LEWIS. *Univ. of Pittsburgh.* (Physiol.)

10:00 **46.** Coagulation abnormality in patients with thrombosis. JOHN A. SPITTEL, JR,* CHRIS A. PASCUZZI,* JOHN H. THOMPSON, JR.* AND CHARLES A. OWEN, JR. *Mayo Fndn and Mayo Clinic.* (Physiol.)

10:15 **47.** Modified one-stage antihemophilic factor (AHF) assay and its use in testing human AHF fractions. W. W. MCLENDON,* E. M. BARROW,* J. P. HURT,* F. T. BRYAN* AND R. H. WAGNER.* *Univ. of North Carolina Sch. of Med. (Pathol.)*

10:30 **48.** Plasma antihemophilic factor (AHF) increase after adrenaline infusion in man. G. I. C. INGRAM.* *Univ. of North Carolina.* (Pathol.)

10:45 **49.** Anticephalin activity of normal and hemophilic alpha lipoprotein fractions. L. A. KAZAL, O. P. MILLER,* R. T. CARROLL* AND L. M. TOCANTINS. *Jefferson Med. Coll.* (Biochem.)

11:00 **50.** Adhesive properties of human leukocytes on a glass bead column. JAMES E. GARVIN.* *Northwestern Univ. Med. Sch.* (Biochem.)

11:15 **51.** Family study of a qualitative platelet disorder (Glanzmann). M. A. PITTMAN* AND JOHN B. GRAHAM. *Univ. of North Carolina Sch. of Med.* (Pathol.)

11:30 **52.** Platelet viscous metamorphosis produced by connective tissue particles. M. B. ZUCKER AND J. BORRELLI.* *Sloan-Kettering Inst.* (Physiol.)

6. Neuropharmacology II

MON. A.M.—DENNIS, ST. DENIS ROOM

Chairman: L. Lasagna

9:00 **53.** Effects of amitriptyline, imipramine, chlorpromazine and nialamide on avoidance behavior. HARLEY M. HANSON.* *Merck Inst. for Therap. Res.* (Pharmacol.)

9:15 **54.** Action of emylcamate and meprobamate on avoidance and fixed interval behavior. JOHN J. BOREN.* *Merck Inst. for Therap. Res.* (Pharmacol.)

9:30 **55.** A procedure for observing the time course of drug effects on operant behavior. FRANCIS MECHNER* AND LAWRENCE GUEVREKIAN.* *Schering Corp.* (Pharmacol.)

9:45 **56.** Methods of detecting behavioral effects of morphine in rats. R. E. EDWARDS.* *Sterling-Winthrop Res. Inst.* (Pharmacol.)

10:00 **57.** Effects of amphetamine, chlorpromazine and pentobarbital on thermoregulatory behavior. BERNARD WEISS* AND VICTOR G. LATIES.* *Johns Hopkins Sch. of Med.* (Pharmacol.)

10:15 **58.** Individual differences in sensitivity of people to the central effects of caffeine. AVRAM GOLDSTEIN AND RICHARD WARREN.* *Stanford Univ.* (Pharmacol.)

10:30 **59.** Effects of alcohol on timing behavior in rat and man. VICTOR G. LATIES* AND BERNARD WEISS.* *Johns Hopkins Sch. of Med.* (Pharmacol.)

10:45 **60.** Psychological effects of piperazine phenothiazines. G. L. KLERMAN* AND A. DIMASCIO.* *Natl. Inst. of Mental Health* and *Massachusetts Mental Health Ctr.* (Pharmacol.)

11:00 **61.** Effects of levarterenol and epinephrine on mood. EDWARD W. PELIKAN. *Boston Univ.*. (Pharmacol.)

Intersociety Sessions—Monday, 1:30 p.m.

7. SYMPOSIUM: Effects of Hallucinogenic Drugs in Man

MON. P.M.—CONVENTION HALL, ROOM A

Chairman: H. E. Himwich

1:30 **62.** Introductory remarks. HAROLD E. HIMWICH. *Galesburg State Res. Hosp.*

1:35 **63.** Effects of LSD-25 and JB-318 on tests of visual and perceptual functions in man. ADRIAN M. OSTFELD. *Univ. of Illinois.*

2:05 **64.** Discussion. WILLIAM T. LHAMON. *Baylor Univ.*

2:25 Discussion from the floor.

2:40 **65.** Hallucinogenic effects and metabolism of tryptamine derivatives in man. STEPHEN I. SZARA. *St. Elizabeths Hosp., Washington, D. C.*

3:00 **66.** Correlations between behavior and the urinary excretion of indoleamines and catecholamines in schizophrenic patients as affected by drugs. GUENTER BRUNE AND GORDON PSCHEIDT. *Galesburg State Res. Hosp.*

3:20 **67.** Possible relations of central amines to behavior in schizophrenic patients. SEYMOUR S. KETY. *Natl. Inst. of Mental Health.*

3:40 **68.** Discussion. NICHOLAS J. GIARMAN. *Yale Univ.*

4:10 Discussion from the floor.

8. Muscle I

MON. P.M.—CONVENTION HALL, ROOM B

Chairman: W. H. F. M. Mommaerts

1:30 **69.** Serum enzyme studies in muscular dystrophy. S. R. CHOWDHURY,* C. M. PEARSON,* W. W. FOWLER, JR.* AND W. H. GRIFFITH. *Univ. of California Sch. of Med.* (Biochem.)

1:45 **70.** Biochemical studies of skeletal muscle in mice with hereditary muscular dystrophy. KAY FINK. *VA Hosp. and UCLA Med. Ctr.* (Biochem.)

2:00 **71.** Metabolic studies on rat muscle fibers. R. D. PETERSON AND C. H. BEATTY. *Univ. of Oregon Med. Sch. and Oregon Primate Res. Ctr.* (Physiol.)

2:15 **72.** Protein composition of sarcoplasm obtained by ultracentrifugation. WILLIAM R. AMBERSON AND ADELIA C. BAUER.* *Marine Biol. Lab., Woods Hole.* (Physiol.)

2:30 **73.** Chemical reactions in contracting muscles. W. F. H. M. MOMMAERTS AND KRIKOR SERAYDARIAN.* *UCLA.* (Physiol.)

2:45 **74.** Selenium in rabbit skeletal muscle myosin. KENNETH P. MCCONNELL AND D. M. ROTH.* *VA Hosp. and Univ. of Louisville Sch. of Med.* (Biochem.)

3:00 **75.** Action of trypsin on acetylmyosin. W. R. MIDDLEBROOK.* *Inst. for Muscle Res., Woods Hole.* (Biochem.)

3:15 **76.** Enzyme-substrate complex of myosin and adenosinetriphosphate as a function of time. LUDDO NANNINGA* AND W. F. H. M. MOMMAERTS. *UCLA.* (Biochem.)

3:30 **77.** Enzymatic centers of myosin. W. WAYNE KIELLEY AND TAKAMITSU SEKINE. *Natl. Insts. of Health.* (Biochem.)

9. Insulin

MON. P.M.—CONVENTION HALL, ROOM 20

Chairman: F. L. Engel

1:30 **78.** Insulin and absorption of certain sugar derivatives. V. W. ADAMKIEWICZ. *Univ. of Montreal.* (Physiol.)

1:45 **79.** Effect of insulin on metabolism of glucosamine. T. HERNANDEZ AND R. A. COULSON. *Louisiana State Univ.* (Physiol.)

2:00 **80.** Ketogenesis in perfused livers of pancreatectomized rats. R. O. SCOW AND S. S. CHERNICK. *Natl. Insts. of Health.* (Physiol.)

2:15 **81.** Hepatic lipogenesis of pancreatectomized dogs. C. A. SHAMOIAN,* E. J. MASORO AND A. CANZANELLI. *Tufts Univ.* (Physiol.)

2:30 **82.** 'Free' insulin and insulin complexes in blood. H. N. ANTONIADES, K. GUNDERSEN* AND H. M. PYLE.* *Protein Fndn. Labs., Jamaica Plain, and Boston Dispensary.* (Biochem.)

2:45 **83.** Effect of starvation on glucose tolerance and serum insulin-like activity in rats. J. OYAMA* AND R. L. GRANT. *Food and Drug Admin.* (Biochem.)

3:00 **84.** Studies suggesting extra-pancreatic production of substances with insulin-like activity. H. L. GOLDBERG* AND R. H. EGDAHL. *Med. Coll. of Virginia.* (Physiol.)

3:15 **85.** Production of diabetes mellitus in mice with alloxan. E. C. TOCUS* AND M. CAVALLO.* *Lederle Labs.* (Pharmacol.)

3:30 **86.** Dialysis-induced hypoglycemia in dogs. J. R. LEONARDS, B. R. LANDAU* AND F. M. BARRY.* *Western Reserve Univ.* (Biochem.)

3:45 **87.** Glucagon antibodies in glucagon metabolism and immunoassay. G. M. GRODSKY,* T. HAYASHIDA,* C. T. PENG* AND I. I. GESCHWIND. *Univ. of California Med. Ctr., San Francisco.* (Biochem.)

10. Cell and Tissue Culture I

MON. P.M.—SHELBURNE, GRANDE BALLROOM

Chairman: H. Eagle

1:30 **88.** Effects of cooling rates and additives on survival of frozen tissue culture cells. J. H. KITE, JR.* AND G. F. DOEBBLER.* *Univ. of Buffalo and Union Carbide Corp.* (Immunol.)

1:45 **89.** Tissue culture studies of cells from marine fish. L. W. CLEM,* L. MOEWUS* AND M. M. SIGEL. *Univ. of Miami.* (Immunol.)

2:00 **90.** Serial cultivation of human diploid cell strains. LEONARD HAYFLICK* AND PAUL S. MOORHEAD.* *Wistar Inst.* (Immunol.)

2:15 **91.** Role of Mg and Ca in cell attachment and spreading reactions. J. B. MACKENZIE AND C. G. MACKENZIE. *Univ. of Colorado.* (Biochem.)

2:30 **92.** Tissue culture of mouse leukemic cells. H. D. SOULE,* D. S. RAMSEY* AND P. G. STANSLY. *Detroit Inst. of Cancer Res.* (Biochem.)

2:45 **93.** Inhibition and partial synchronization of cell division in suspension cultures. E. W. TAYLOR.* *Univ. of Chicago.* (Physiol.)

3:00 **94.** Mechanism of reversible mitotic inhibition produced by x-irradiation of mammalian cells in vitro. T. T. PUCK AND M. YAMADA.* *Univ. of Colorado.* (Immunol.)

3:15 **95.** Determination of species antigens of cultured cells by immunofluorescence. C. S. STULBERG, W. F. SIMPSON,* W. D. PETERSON* AND L. BERMAN.* *Michigan Child Res. Ctr. and Wayne State Univ.* (Immunol.)

3:30 **96.** Serological analysis of cultured cells. NOEL R. ROSE AND LEIF KORNSTAD.* *Univ. of Buffalo.* (Immunol.)

3:45 **97.** Erythrocyte receptors for species specific hemagglutinins evoked by cultivated mammalian cells. K. G. BRAND AND J. T. SYVERTON. *Univ. of Minnesota.* (Immunol.)

4:00 **98.** Specificity of antigens in extracts from HeLa and JIII cells. J. M. MCKENNA,* R. P. SANDERSON* AND W. S. BLAKEMORE.* *Univ. of Pennsylvania.* (Immunol.)

4:15 **99.** Electron microscopic localization of ferritin-labeled antibody in ascites tumor cells. J. EASTON,* B. GOLDBERG* AND H. GREEN. *New York Univ.* (Immunol.)

11. Neuropharmacology III

MON. P.M.—DENNIS, ST. DENIS ROOM

Chairman: L. O. Randall

1:30 **100.** Interaction of imipramine, its derivatives, and phenothiazines with 5-HT, epinephrine and norepinephrine. LAWRENCE SOFFER* AND LASZLO GYERMEK. *Geigy Res. Labs.* (Pharmacol.)

1:45 **101.** Interactions of imipramine and autonomic agents. H. SABELLI,* J. LEVIN* AND J. E. P. TOMAN. *Chicago Med. Sch.* (Pharmacol.)

2:00 **102.** Blocking of reserpine action by imipramine, a drug devoid of stimulatory effects in normal animals. F. SULSER,* J. S. WATTS* AND B. B. BRODIE. *Natl. Insts. of Health.* (Pharmacol.)

2:15 **103.** Imipramine, chlorpromazine and amphetamine interactions: possible mode of anti-depressive action of imipramine. LARRY STEIN* AND JOSEPH SEIFTER. *Wyeth Labs.* (Pharmacol.)

2:30 **104.** Interaction of imipramine with monoamine oxidase inhibitors. WILLIAMINA A. HIMWICH AND JOANN C. PETERSEN.* *Galesburg State Res. Hosp.* (Physiol.)

2:45 **105.** Correlation between locomotor stimulant and brain monoamine oxidase inhibitory activity of iproniazid, nialamide and pheniprazine in the rat. SAMUEL IRWIN AND I. I. A. TABACHNICK. *Schering Corp.* (Pharmacol.)

3:00 **106.** A new micromethod for monoamine oxidase(s). R. E. MCCAMAN.* *Indiana Univ.* (Pharmacol.)

3:15 **107.** Metabolism of N,N-dimethyltryptamine-N-oxide by monoamine oxidase. T. E. SMITH,* J. F. RENSON,* H. WEISSBACH* AND S. UDENFRIEND. *Natl. Heart Inst.* (Biochem.)

3:30 **108.** Neurologic and neuropathologic effects of prolonged administration of JB-516, JB-835 and other monoamine oxidase inhibitors. H. M. MALING, B. HIGHMAN* AND S. SPECTOR. *Natl. Insts. of Health.* (Pharmacol.)

3:45 **109.** A new class of inhibitors of monoamine oxidase (MAO). H. Y. MELTZER.* *Yale Med. Sch.* (Pharmacol.)

4:00 **110.** Reversal of reserpine sedation with some MAO inhibitors and analeptics. ROBERT P. ROWE,* SALLY L. LOFGREN* AND ANNE KELLEY.* *Chas. Pfizer.* (Pharmacol.)

4:15 **111.** Reversal of the depressant activity of methyl o-(2-tetrahydropyranyl) reserpate by monamine oxidase inhibitors. PATRICIA FURNESS* AND ALBERT J. PLUMMER. *Ciba Pharmaceutical Prod.* (Pharmacol.)

Placement Service

Main Arena Floor, Convention Hall

Intersociety Coffee Lounge

Monday through Friday, 8:30 A.M.–5:00 P.M., Convention Hall, Room E

Intersociety Symposia

See pages 459, 478, 502, 523, 544 for symposia on Effects of Hallucinogenic Drugs on Man, Gastroenterology, The Hemicholiniums, Lipid Metabolism, Use and Care of Laboratory Animals, and Viruses and Neoplasia.

Physiology Society Sessions—Monday, 9:00 a.m.

12. Regulation of Gastric Secretion

MON. A.M.—CONVENTION HALL, ROOM B

Chairman: C. A. M. Hogben

9:00 **112.** Effect of feeding on eosinophile counts in gastric mucosa. RHODA GRANT. *Univ. of Illinois.*

9:15 **113.** Chemically determined uptake of intravenously injected aminoguanidine by various organs. C. B. LAWYER* AND E. LIEBER.* *Univ. of Illinois and Roosevelt Coll.*

9:30 **114.** Uptake of intravenously injected C^{14} aminoguanidine by rat tissues. H. H. WELCH.* *Univ. of Illinois and Roosevelt Coll.* (Pharmacol.)

9:45 **115.** Method for preparation of a 'gastrin' containing no 'free histamine.' R. WOJCIECH* AND A. C. IVY. *Univ. of Illinois.*

10:00 **116.** Chromatography of crude gastrin. H. Kato.* *Univ. of Illinois.*

10:15 **117.** Chemical estimation of histamine in 'gastrin.' M. YUSEM.* *Univ. of Illinois.*

10:30 **118.** Comparative study of histamine and histamine metabolites on gastric secretion. T. M. LIN, D. N. BENSLAY* AND F. G. HENDERSON. *Lilly Res. Labs.*

10:45 **119.** Fasting gastric content in unrestrained spider monkeys and macaques. F. P. BROOKS, F. M. ATTINGER* AND G. BJOTVEDT.* *Univ. of Pennsylvania.*

11:00 **120.** Intestinal phase of gastric secretion. N. H. STONE,* W. O. GRIFFEN, JR.,* D. M. NICOLOFF,* N. MALUF AND O. H. WANGENSTEEN. *Univ. of Minnesota.*

11:15 **121.** Influence of urethane anesthesia on effect of insulin hypoglycemia on gastric secretion in chronic fistula rats. S. P. BRALOW,* S. A. KOMAROV AND H. SHAY. *Fels Research Inst. and Temple Univ. Med. Ctr.*

11:30 **122.** Mechanism of action of reserpine on gastric secretion. H. SCHAPIRO* AND E. R. WOODWARD. *Univ. of Florida Coll. of Med.*

11:45 **123.** Pathogenesis of Mann-Williamson ulcer. R. MENGUY AND H. MINGS.* *Univ. of Oklahoma Med. Ctr. and VA Hosp.*

13. Micropuncture; Acidification; Ammonia

MON. A.M.—CONVENTION HALL, ROOM 21

Chairman: G. Giebisch

9:00 **124.** Micropuncture study of excretion of inulin and certain electrolytes by rat kidney. P. A. BOTT AND J. B. LITCHFIELD.* *Woman's Med. Coll. of Pennsylvania.*

9:15 **125.** Measurement of short-circuit current across proximal tubules in rat kidney. E. E. WINDHAGER* AND G. GIEBISCH. *Cornell Univ. Med. Coll.*

9:30 **126.** Calcium clearance as function of sodium clearance. M. WALSER. *Johns Hopkins Univ. Med. Sch.*

9:45 **127.** Effect of chronic respiratory acidosis on renal acid excretion. N. LEWIS* AND D. H. SIMMONS. *VA Ctr. and UCLA.*

10:00 **128.** Influence of organic acids and bases and altered respiration on renal acid excretion. D. H. SIMMONS. *VA Ctr. and UCLA.*

10:15 **129.** Renal effects of Tham buffer. R. PORTWOOD,* F. MANFREDI* AND F. DOWNEY.* *Duke Univ.*

10:30 **130.** Transient excretion of phosphate related to urinary acidification in dogs. G. CARRASQUER* AND W. A. BRODSKY. *Univ. of Louisville.*

10:45 **131.** Sources of urinary ammonia. R. J. SHALHOUB,* M. CANESSA-FISCHER,* W. A. WEBBER,* S. GLABMAN* AND R. F. PITTS. *Cornell Univ. Med. Coll.*

11:00 **132.** Effect of rapid and transitory changes in urine and renal blood pH on NH_4 excretion. L. P. SULLIVAN* AND M. MCVAUGH.* *Univ. of Michigan.*

14. Radiation

MON. A.M.—CONVENTION HALL, ROOM 13

Chairman: H. J. Curtis

9:00 **133.** Effects of microwave irradiation on spermatogenesis and on accessory sex organs in male albino rat. J. A. THOMAS* AND J. D. THOMSON. *State Univ. of Iowa.*

9:15 **134.** Effect of x-irradiation on anesthesia produced in rats by sodium pentobarbital given orally or intraperitoneally. T. R. NOONAN AND F. V. KEARY.* *Univ. of Rochester.*

9:30 **135.** Effects of x-irradiation on kinetic, sedimentation and fluorescent properties of glutamic dehydrogenase. S. J. ADELSTEIN.* *Harvard Med. Sch.*

9:45 **136.** Effects of in vitro x-irradiation on migratory activity of human polymorphonuclear leucocytes. C. K. LEVY* AND M. M. KETCHEL.* *Worcester Fndn. for Exper. Biol.*

10:00 **137.** Postirradiation leukocyte dynamics in x-irradiated dog. M. L. SHORE* AND A. K. DAVIS. *USN Radiological Def. Lab.*

10:15 **138.** Effects of x-irradiation on distribution of radioiodinated human serum albumin in golden hamster. A. B. CALLAHAN* AND G. P. FULTON. *Boston Univ.*

10:30 **139.** Albumin metabolism in lethally irradiated mouse. W. FRIEDBERG* AND V. K. JENKINS.* *Civil Aeromed. Res. Inst. and Oak Ridge Natl. Lab.*

10:45 **140.** Gross effects of x-ray on rabbit embryos irradiated before implantation. O. R. INMAN,* C. R. MARKIVEE* AND H. KYLANDER.* *Galesburg State Res. Hosp.*

11:00 **141.** Bone marrow and splenic autographs in treatment of acute radiation in dogs. R. C. LILLEHEI, J. K. LONGERBEAM AND S. HILAL. *Univ. of Minnesota.*

11:15 **142.** Effects of B-aminoethylisothiuronium and P-aminopropiophenone on 'non-recuperable' fraction of injury due to x-irradiation. J. R. NEWSOME* AND R. R. OVERMAN. *Univ. of Tennessee.*

11:30 **143.** Double tracers for in vivo measurement of DNA metabolism. S. L. COMMERFORD,* R. C. KRUEGER* AND W. L. HUGHES. *Brookhaven Natl. Lab.*

15. Cardiac Dynamics

MON. A.M.—TRAYMORE, AMERICAN ROOM

Chairman: E. Braunwald

9:00 **144.** Quantitation of suction force in excised frog ventricle. J. H. KOHLER, JR.* AND G. A. BRECHER. *Emory Univ.*

9:15 **145.** Pulsus alternans; alternating end diastolic fiber length as causative factor. J. H. MITCHELL, E. H. SONNENBLICK* AND S. J. SARNOFF. *Natl. Insts. of Health.*

9:30 **146.** Ventricular function in man. E. BRAUNWALD, C. J. FRAHM* AND J. ROSS, JR.* *Natl. Insts. of Health.*

9:45 **147.** Slope changes of ventricular pressure curves compared with ventricular function curves. R. A. TOLMAN* AND P. G. YOUNG.* *Univ. of Louisville Sch. of Med.*

10:00 **148.** Influence of left atrial dynamics on mitral valve closure. S. J. SARNOFF, J. H. MITCHELL AND J. P. GILMORE. *Natl. Insts. of Health.*

10:15 **149.** Ventricular consequences of atrial contraction in dogs with complete heart block. E. W. HAWTHORNE. *Howard Univ. Sch. of Med.*

10:30 **150.** Catecholamine concentration of chronically denervated dog heart and evidence of carotido-sympatho-atrial and orbito-sympatho-atrial reflexes. B. BALKISSOON* AND E. W. HAWTHORNE. *Howard Univ. Sch. of Med.*

10:45 **151.** Atrial contribution to stroke volume in dogs with chronic A-V block. J. SNYDER,* F. BENDER,* R. S. ZITNIK,* A. H. KITCHIN,* D. E. DONALD AND E. H. WOOD. *Mayo Clinic and Mayo Fndn.*

11:00 **152.** Effect of heart rate on cardiac output and right atrial pressure during hypovolemia and hypervolemia in dogs with chronic A-V block. R. S. ZITNIK,* F. BENDER,* J. SNYDER,* A. H. KITCHIN* AND EARL H. WOOD. *Mayo Clinic and Mayo Fndn.*

11:15 **153.** Cardiovascular effects of epinephrine and angiotensin in dogs with heart block. W. G. POGUE* AND E. W. HAWTHORNE. *Howard Univ. Sch. of Med.*

11:30 **154.** Metabolic changes occurring in canine heart during rigor associated with potassium citrate and anoxic arrest. V. L. GOTT.* *Univ. of Wisconsin Med. Sch.*

11:45 **155.** Effect of anoxic arrest on water and electrolyte content of blood and cardiac muscle. P. V. MOULDER,* D. HAGER* AND L. EICHELBERGER. *Univ. of Chicago.* (Biochem.)

16. Alveolar Gas Exchange

MON. A.M.—TRAYMORE, TRAYMORE ROOM

Chairman: H. Rahn

9:00 **156. INTRODUCTORY REMARKS.** Alveolar gas exchange. H. RAHN. *Univ. of Buffalo.*

9:30 **157.** Effects of voluntary hyperventilation and intermittent positive pressure breathing on distribution of ventilation and perfusion. W. A. BRISCOE, G. EMMANUEL,* W. M. SMITH* AND A. COURNAND. *Columbia Univ.*

9:45 **158.** Homogeneity of D_{LCO}/V_A ratio within normal human lung. M. H. WILLIAMS, JR. AND C. W. FRANK. *Albert Einstein Coll. of Med.*

10:00 **159.** Permeability of monolayers (about 30Å thick) to CO_2 and O_2. M. BLANK.* *Columbia Univ.*

10:15 **160.** New concept of physiological factors influencing absorption of CO by human lung. N. M. MOORE,* T. C. SMITH,* P. I. SUNAHARA* AND J. RANKIN.* *Univ. of Wisconsin.*

10:30 **161.** Measurement of alveolo-capillary diffusing surface and volume of capillary bed in normal human lungs. E. R. WEIBEL.* *Columbia Univ.*

10:45 **162.** Comparative effects of pulmonary arterial and venous pressure on diffusing capacity. W. H. LAWSON, JR.,* H. N. DUKE,* R. W. HYDE* AND R. E. FORSTER. *Univ. of Pennsylvania.*

11:00 **163.** Pulmonary ventilation-perfusion relationships. J. E. COHN AND H. DONOSO.* *Utah Univ. Med. Sch. and VA Hosp.*

11:15 **164.** Effect of varying mixed venous CO_2 tension upon pulmonary diffusing capacity in man. L. CANDER* AND E. HANOWELL.* *New England Ctr. Hosp., Boston and Hahnemann Med. Coll., Philadelphia.*

17. Units; Reflexes

MON. A.M.—TRAYMORE, ROSE ROOM

Chairman: K. Frank

9:00 **165.** Electrical recording of reflexes of fish spinal cord. D. M. EASTON. *Florida State Univ.*

9:15 **166.** Structure and function in rapid electroplaques. M. V. L. BENNETT AND H. GRUNDFEST. *Columbia Univ.*

9:30 **167.** Electrically excitable responses in Raia Erinacea electroplaques. B. COHEN,* M. V. L. BENNETT AND H. GRUNDFEST. *Columbia Univ.*

9:45 **168.** Coordination between hindlimb reflexes. L. A. COHEN. *Univ. of Pittsburgh.*

10:00 **169.** Repetitive firing of mammalian dorsal root ganglion cells and motoneurons. G. AUSTIN AND M. SATO. *Univ. of Oregon.*

10:15 **170.** Effect of diencephalic stimulation on monosynaptic reflex. R. BURKE.* *Univ. of Rochester.*

10:30 **171.** Blocking and facilitation of monosynaptic trigeminal transmission in rat. R. P. ERICKSON,* R. L. KING* AND C. PFAFFMANN. *Univ. of Washington and Brown Univ.*

10:45 **172.** Tactile projection to nucleus gracilis of cat. J. R. GENTRY,* D. G. WHITLOCK* AND E. R. PERL. *Univ. of Utah.*

11:00 **173.** Cortical and reticular influences upon evoked responses in dorsal column nuclei. C. GUZMAN-FLORES,* N BUENDIA* AND D. B. LINDSLEY. *UCLA and Long Beach VA Hosp.*

11:15 **174.** Inhibition of gracile and cuneate nuclei. G. P. MCCOUCH, W. W. CHAMBERS AND C. N. LIU.* *Univ. of Pennsylvania.*

18. Comparative

MON. A.M.—TRAYMORE, BELVEDERE ROOM

Chairman: P. F. Scholander

9:00 **175.** Pacemaker activity in jellyfish ganglia. L. M. PASSANO AND C. B. MCCULLOUGH. *Yale Univ.*

9:15 **176.** Responses of heart of pelecypod tivela stultorum to acetylcholine. P. WITKOVSKY* AND L. GOLDMAN. *UCLA.*

9:30 **177.** Comparative study of cardiovascular effects of epinephrine and norepinephrine. T. K. AKERS* AND C. N. PEISS. *Stritch Sch. of Med. and Loyola Univ.*

9:45 **178.** Copper economy and antennary gland function in land crab, *Cardisoma guanhumi*. C. A. GIFFORD* AND C. E. LANE. *Marine Lab., Univ. of Miami.*

10:00 **179.** Transferrins of amphibia and reptilia. H. C. DESSAUER, W. FOX* AND Q. L. HARTWIG.* *Louisiana State Univ.*

10:15 **180.** Glycogen and lipid storage in some fishes of Gulf of Mexico. C. L. DODGEN* AND L. L. SULYA.* *Univ. of Mississippi Med. Ctr.*

10:30 **181.** Problems of physiological research on dolphin, Tursiops. J. C. LILLY. *Communication Res. Inst., Coconut Grove, Florida.*

Physiology Society Sessions—Monday, 1:30 p.m.

19. Body Water

MON. P.M.—CONVENTION HALL, ROOM 21

Chairman: E. F. Adolph

1:30 **182. INTRODUCTORY REMARKS.** Movement of H_2O in body and in cell. E. F. ADOLPH. *Univ. of Rochester.*

2:00 **183.** Osmotic regulation in euryhaline crab-eating frog (Rana cancrivora) of southeast Asia. M. S. GORDON,* K. SCHMIDT-NIELSEN AND H. M. KELLY.* *UCLA and Duke Univ.*

2:15 **184.** Hormonal regulation of salt balance in frogs. B. T. SCHEER, M. W. MUMBACH* AND B. L. COX.* *Univ. of Oregon.*

2:30 **185.** Validity of using iodoantipyrine for measuring body water. J. M. SULLIVAN* AND J. C. ROSE. *Georgetown Univ.*

2:45 **186.** Distribution of 4-iodoantipyrine in the rat. L. A. SAPIRSTEIN. *Ohio State Univ.*

3:00 **187.** Simultaneous quantitative estimation of intracranial contents; effect of hypothermia, hypertonic urea. H. L. ROSOMOFF. *Univ. of Pittsburgh and VA Hosp.*

3:15 **188.** Physiological replication of cholera. R. A. PHILLIPS, W. W. WALCOTT, N. KUZUO* AND S. WONGSATHUAYTHONG.* *Naval Med. Res. Unit No. 2, Taipei, Taiwan.*

3:30 **189.** Intracellular water and electrolyte shifts in replication of cholera. W. W. WALCOTT, R. Q. BLACKWELL,* T. MONNA* AND R. A. PHILLIPS. *Naval Med. Res. Unit No. 2, Taipei, Taiwan.*

3:45 **190.** Total albumin in human lymph and tissue fluids. E. B. REEVE, H. BAILEY* AND Y. TAKEDA.* *Univ. of Colorado and Ohio Oil Res. Ctr., Littleton, Colorado.*

4:00 **191.** Changes with growth in dermal wheal response to injected fluids. W. H. BATCHELOR.* *Massachusetts Gen. Hosp. and Harvard Med. Sch.* (Immunol.)

20. Gastrointestinal Absorption

MON. P.M.—CONVENTION HALL, ROOM 13

Chairman: R. S. Gordon, Jr.

1:30 **192.** Absorption of glucose in vivo from rat small intestine. H. SCHEDL,* G. NOKES* AND J. CLIFTON.* *State Univ. of Iowa Coll. of Med.*

1:45 **193.** Absorption and active transport of sugar (D-glucose) in segments of fish intestine. X. J. MUSACCHIA. *St. Louis Univ.*

2:00 **194.** Influence of solute concentration on intestinal absorption. F. A. JACOBS,* R. C. FLAA,* D. PERSON* AND T. J. PACHOLL.* *Univ. of North Dakota.*

2:15 **195.** Small intestinal resection and fat absorption. F. GUMP,* R. BEALS* AND H. G. BARKER. *Columbia Univ. and Presbyterian Hosp.*

2:30 **196.** Localization of bile acid absorption from small intestine of guinea pig. L. LACK* AND I. M. WEINER.* *Johns Hopkins Univ. Sch. of Med.*

2:45 **197.** Comparative absorption of squalene and cholesterol. R. SUZUKI.* *Univ. of Illinois.*

3:00 **198.** Effect of niacin and hyodesoxycholic acid in rats on fecal excretion of end products of cholesterol metabolism. C. S. NARAYANA SETTY.* *Univ. of Illinois.*

3:15 **199.** Transfer of inorganic phosphate across intestinal wall in vitro as affected by vitamin D and calcium. H. E. HARRISON AND H. C. HARRISON. *Baltimore City Hosps. and Johns Hopkins Univ.*

3:30 **200.** Movement of fluoride across gastric membranes. W. C. FOSTER AND J. P. RUSH.* *Misericordia Hosp., Philadelphia.*

3:45 **201.** Cellular dynamics in normal and 'resected' small intestine of rat. M. R. LORAN* AND T. L. ALTHAUSEN.* *Univ. of California.*

4:00 **202.** Nature of lymphatic flow response to secretin and related hormones. E. RAZIN,* M. G. FELDMAN* AND D. A. DREILING. *Mt. Sinai Hosp., New York.*

21. Cardiac Muscle; Conduction

MON. P.M.—TRAYMORE, AMERICAN ROOM

Chairman: C. McC. Brooks

1:30 **203.** Impedance of cardiac muscle tissue. N. SPERELAKIS AND T. HOSHIKO. *Western Reserve Univ.*

1:45 **204.** Conduction velocity and membrane potential in Purkinje fibers. R. TH. VAN DAM* AND B. F. HOFFMAN. *State Univ. of New York.*

2:00 **205.** Rates of recovery of excitability in various parts of dog myocardium. E. T. ANGELAKOS, J. C. TORRES* AND M. L. TORCIANA.* *Boston Univ.*

2:15 **206.** Measurement of safety factor for conduction in cardiac muscle. J. USHIYAMA* AND C. McC. BROOKS. *State Univ. of New York.*

2:30 **207.** Electrical activity in single cells of moth myocardium. F. V. McCANN.* *Dartmouth Med. Sch.*

2:45 **208.** Quantitative aspects of excitation in hypothermic dog heart. J. C. TORRES,* E. T. ANGELAKOS AND A. H. HEGNAUER. *Boston Univ.*

3:00 **209.** Cardiac muscle excitability, refractory period and conduction velocity under acute hemorrhage, in dogs. M. I. RODRIGUEZ. *Univ. of El Salvador.*

3:15 **210.** Toxic effects of ouabain on Purkinje fibers and ventricular muscle. M. VASSALLE,* J. KARIS* AND B. F. HOFFMAN. *State Univ. of New York.*

3:30 **211.** Active state, force velocity relationships and inotropic mechanisms in mammalian papillary muscle. E. H. SONNENBLICK* AND Z. T. McCALLUM. *Natl. Insts. of Health.*

3:45 **212.** Relationships between developed tension, rate of tension, development and time integral of tension of isometric contractions of cardiac muscle. T. J. REEVES, L. L. HEFNER, J. GREEN AND R. CORCORAN. *Univ. of Alabama Med. Ctr.*

4:00 **213.** Correlation between electrical and mechanical activity of heart during hyper- and hypocalcemia. B. SURAWICZ.* *Univ. of Vermont.*

4:15 **214.** Effect of high potassium concentrations on electrocardiograms and atrial and ventricular intracellular action potentials of isolated, perfused rabbit hearts. E. LEPESCHKIN, B. SURAWICZ* AND J. CH. SHIUE.* *Univ. of Vermont.*

22. Peripheral Circulation I

MON. P.M.—TRAYMORE, TRAYMORE ROOM

Chairman: R. F. Rushmer

1:30 **215.** Time course of reactive hyperemia in isolated dog hind limbs. C. A. WIEDERHIELM* AND R. F. RUSHMER. *Univ. of Washington.*

1:45 **216.** Reactive hyperemia in sympathectomized, cooled and heated extremeties of dogs. H. E. EDERSTROM AND R. J. BACHE.* *Univ. of North Dakota.*

2:00 **217.** Recording from peripheral nerves with chronically implanted electrodes. F. W. KLUSSMANN* AND R. F. RUSHMER. *Univ. of Washington.*

2:15 **218.** Effect of carotid sinus activity on local oxygen consumption at rest and during exercise. J. P. REMENSNYDER,* J. H. MITCHELL AND S. J. SARNOFF. *Natl. Insts. of Health.*

2:30 **219.** Skeletal muscle blood flow regulation. R. D. JONES* AND R. M. BERNE. *Western Reserve Univ.*

2:45 **220.** Effects of sympathetic vasoconstriction and vasodilation on skeletal muscle force. L. HIRVONEN* AND R. R. SONNENSCHEIN. *UCLA.*

3:00 **221.** Roles of sympathetic vasoconstrictor and vasodilator innervations in regulation of nutritional and nonnutritional blood flow in skeletal muscle. R. R. SONNENSCHEIN AND L. HIRVONEN.* *UCLA.*

3:15 **222.** Effect of muscle contractions on autoregulation of blood flow through skeletal muscle. W. N. STAINSBY. *Univ. of Florida.*

3:30 **223.** Control of peripheral blood flow distribution. R. F. RUSHMER, D. L. FRANKLIN* AND R. L. VAN CITTERS.* *Univ. of Washington.*

3:45 **224.** Evidence that newly-synthesized (induced) histamine is an intrinsic regulator of the microcirculation. R. W. SCHAYER. *Merck Inst. for Therap. Res.*

4:00 **225.** Local effects of magnesium and acetate on vascular resistance in dog forelimb. J. I. MOLNAR,* R. A. RENN* AND F. J. HADDY. *VA Res. Hosp. and Northwestern Univ.*

4:15 **226.** Mixing problem in measurement of femoral arterial blood flow. J. B. BASSINGTHWAIGHTE.* *Mayo Clinic and Mayo Fndn.*

23. Hypothalamus

MON. P.M.—TRAYMORE, ROSE ROOM

Chairman: Evelyn Anderson

1:30 **227.** Aphagia, adipsia and polydipsia following hypothalamic lesions in the rat. R. W. SMITH* AND S. M. MCCANN. *Univ. of Pennsylvania.*

1:45 **228.** Evidence of separate 'feeding' and 'hunger motivational' systems in lateral hypothalamus of rat. P. J. MORGANE.* *Univ of Tennessee.*

2:00 **229.** Brain stem control of the neurohypophysis in cat. A. B. ROTHBALLER. *Albert Einstein Coll. of Med.*

2:15 **230.** Action of neurohypophysial hormones on isolated adenohypophysis. J. W. WOODS AND P. BARD. *Johns Hopkins Med. Sch.*

2:30 **231.** Corticotropin releasing effect of synthetic lysine vasopressin. E. J. WEBER* AND W. R. HEARN.* *Iowa State Univ.*

2:45 **232.** Adrenocortical response to immobilization in rats with lesions in hippocampus and amygdala. K. M. KNIGGE. *Univ. of Cincinnati.*

3:00 **233.** Evidence for central nervous system site of corticosterone inhibition of adrenocorticotrophin (ACTH) release. S. E. LEEMAN,* D. W. GLENISTER* AND F. E. YATES. *Brandeis Univ. and Harvard Med. Sch.*

3:15 **234.** Hypothalamic stimulation and ascorbic acid levels in endocrine glands. J. SNYDER* AND S. A. D'ANGELO. *Jefferson Med. Coll.*

3:30 **235.** Thyroid regulating activity of intra-ocular pituitary grafts in hypophysectomized rats with massive hypothalamic lesions. A. KHAZIN* AND S. REICHLIN. *Washington Univ. Sch. of Med.*

3:45 **236.** Long-term effects of hypothalamic lesions on reproduction in sheep. W. H. JOHNSON,* E. M. BANKS* AND A. V. NALBANDOV.* *Univ. of Illinois.*

4:00 **237.** Gonadotrophin assays in rats with sex gland-stimulating hypothalamic lesions. E. M. BOGDANOVE,* A. F. PARLOW,* J. N. BOGDANOVE,* I. BHARGAVA* AND E. V. CRABILL.* *Albany Med. Coll., Vincent Memorial Hosp. and Harvard Med. Sch.*

4:15 **238.** Progesterone-induced storage of pituitary gonadotropin in persistenestrous rats. R. A. GORSKI* AND C. A. BARRACLOUGH.* *UCLA.*

24. Membrane and Endplate Potentials

MON. P.M.—TRAYMORE, BELVEDERE ROOM

Chairman: M. G. Larrabee

1:30 **239.** Current-voltage relations in lobster giant axon membrane under voltage clamp conditions. F. J. JULIAN,* J. W. MOORE* AND D. E. GOLDMAN. *Naval Med. Res. Inst.*

1:45 **240.** Diode-like property of nerve cell membrane. J. T. APTER* AND K. JARVIS.* *Univ. of Illinois.*

2:00 **241.** Carbohydrate dependence of excitability and conduction in immature nerve fibers during repetitive stimulation. M. H. WEISS* AND F. G. CARPENTER. *Dartmouth Med. Sch.*

2:15 **242.** Effects of ethyl fluoroacetate on frog single nerve fibers. G. M. SCHOEPFLE AND D. B. MCDOUGAL, JR.* *Washington Univ.*

2:30 **243.** Reversible conduction block produced by acetylcholine in cetyltrimethylammonium bromide treated nerves. G. D. WEBB* AND R. R. WALSH. *Univ. of Colorado.*

2:45 **244.** Changes of electrical properties of lobster giant axons in response to methylene blue and ribonuclease. T. R. PODLESKI* AND E. L. GASTEIGER. *Univ. of Rochester.*

3:00 **245.** Role of potassium during excitation of frog single nerve fiber. E. B. WRIGHT AND H. OOYAMA. *Univ. of Florida.*

3:15 **246.** Release of membrane calcium and membrane depolarization. K. NODA,* K. KOKETSU* AND S. MIYAMOTO.* *Univ. of Illinois.*

3:30 **247.** Effect of detergent on electrical properties of squid axon membrane. W. J. ADELMAN, JR. AND U. KISHIMOTO. *Natl. Insts. of Health.*

3:45 **248.** Effect of 2-formyl-1-methylpyridinium iodide oxime (2-PAM) on nerve-muscle transmission in frog. K. IKEDA* AND C. EDWARDS. *Univ. of Minnesota.*

4:00 **249.** Effect of low pH on neuromuscular transmission. J. DEL CASTILLO, T. E. NELSON, JR. AND V. SANCHEZ. *Univ. of Puerto Rico.*

4:15 **250.** Influence of ionic size of receptor activators on neuromuscular transmission block. W. L. NASTUK. *Columbia Univ.*

Biochemistry Society Sessions—Monday, 9:00 a.m.

25. SYMPOSIUM: Topics of Current Interest in Biochemistry

MON. A.M.—CONVENTION HALL, BALLROOM

Chairman: F. Lipmann

9:00 **251.** Introduction. F. LIPMANN. *Rockefeller Inst.*
9:10 **252.** Synthesis and function of the DNA-like RNA. E. VOLKIN. *Oak Ridge Natl. Lab.*
9:50 **253.** Enzymatic synthesis of ribonucleic acid. S. B. WEISS. *Univ. of Chicago.*
10:30 **254.** Coenzyme function of ribonucleic acid in glutathione synthesis. H. M. BATES. *Rockefeller Inst.*
11:10 **255.** Biosynthesis of bacterial cell walls. J. L. STROMINGER. *Washington Univ.*

26. SYMPOSIUM: Mechanism of Action of Coenzymes

MON. A.M.—CONVENTION HALL, ROOM H

Chairman: E. E. Snell

9:00 **256.** Introduction. E. E. SNELL. *Univ. of California.*
9:10 **257.** Vitamin B_{12} coenzyme. H. A. BARKER. *Univ. of California.*
9:45 **258.** Role of vitamin B_{12} derivatives in reactions of pyruvate. J. C. RABINOWITZ. *Univ. of California.*
10:00 **259.** Reaction mechanism of liver alcohol dehydrogenase. H. THEORELL. *Karolinska Inst., Stockholm.*
10:40 **260.** Role of thiamine pyrophosphate in catalysis. L. O. KRAMPITZ. *Western Reserve Univ.*
11:15 **261.** Vitamin B_6 coenzymes and transamination. W. T. JENKINS. *Univ. of California.*
11:30 **262.** Biotin enzymes. S. OCHOA. *New York Univ.*

27. SYMPOSIUM: Structure and Function of Peptide Hormones

MON. A.M.—CONVENTION HALL, STAGE

Chairman: J. S. Fruton

9:00 **263.** Introduction. J. S. FRUTON. *Yale Univ.*
9:10 **264.** Relationship of organic structure to the biological activities of oxytocin and vasopressin. V. DU VIGNEAUD. *Cornell Univ.*
9:50 **265.** Peptides of the renal pressor system. L. T. SKEGGS. *Western Reserve Univ.*
10:35 **266.** Structure and function in the corticotrophin series. K. HOFMANN. *Pittsburgh Univ.*
11:10 **267.** Mechanism of MSH action. A. B. LERNER. *Yale Univ.*

Biochemistry Society Sessions—Monday, 1:30 p.m.

28. Lipid Metabolism I

MON. P.M.—CONVENTION HALL, BALLROOM

Chairman: S. Gurin

1:30 **268.** Oxidation of glutaryl coenzyme A to glutaconyl coenzyme A. E. RENO TUSTANOFF* AND JOSEPH R. STERN. *Western Reserve Univ.*
1:45 **269.** Conversion of acrylate to succinate in propionibacteria. ROBERT W. SWICK. *Argonne Natl. Lab.*
2:00 **270.** Enzymatic isomerization of methylmalonyl CoA to succinyl CoA. RAJARSHI MAZUMDER* AND TAIJI SASAKAWA.* *New York Univ.*
2:15 **271.** CO_2 fixation by propionyl carboxylase and methylmalonyl oxaloacetic transcarboxylase. RUNE STJERNHOLM AND HARLAND G. WOOD. *Western Reserve Univ.*
2:30 **272.** Phosphoenolpyruvic carboxytransphosphorylase. PATRICK M. L. SIU,* RUNE STJERNHOLM AND HARLAND G. WOOD. *Western Reserve Univ.*
2:45 **273.** Synthesis and breakdown of malonyl CoA by wheat germ enzymes. M. D. HATCH* AND P. K. STUMPF. *Univ. of California.*
3:00 **274.** Fatty acid synthesis from malonyl CoA in liver from starved rats refed a fat-free diet. DOROTHY D. HUBBARD,* DAVID W. ALLMANN,* GEORGE S. MCLAIN* AND DAVID M. GIBSON. *Indiana Univ.*
3:15 **275.** Acetyl CoA and malonyl CoA condensation by the fatty acid synthesizing system. H. K. PUJARI.* *Duke Univ.*
3:30 **276.** Synthesis of long chain fatty acids. R. BRESSLER* AND SALIH J. WAKIL. *Duke Univ.*
3:45 **277.** α-Methylmalonate incorporation into the branched chain lactone in erythromycin. TOSHI KANEDA* AND JOHN W. CORCORAN.* *Western Reserve Univ.*
4:00 **278.** Malonyl CoA-CO_2 exchange reaction. ALFRED W. ALBERTS* AND P. ROY VAGELOS.* *Natl. Heart Inst.*
4:15 **279.** Role of malonate in the biosynthesis of mold tropolones. RONALD BENTLEY. *Univ. of Pittsburgh.*
4:30 **280.** Role of malonate in penicillic acid biosynthesis. JOHN KEIL.* *Univ. of Pittsburgh.*

29. Enzymes I. Mechanisms

MON. P.M.—CONVENTION HALL, ROOM H

Chairman: P. P. Cohen

1:30 **281.** Properties of brain glutamic decarboxylase. DAISY G. SIMONSEN AND EUGENE ROBERTS. *City of Hope Med. Ctr.*
1:45 **282.** Inhibition by thyroxine of γ-aminobutyrate-

α-ketoglutarate transaminase. ANTONIO HORVATH,* FERNANDO ORREGO,* HERBERT MCKENNIS, JR. *Univ. of Chile.*

2:00 **283.** Pyridoxamine-ketoacid transaminases, and some new properties of glutamic-oxaloacetic transaminase. HIROSHI WADA* AND ESMOND E. SNELL. *Univ. of California.*

2:15 **284.** Inhibition of sulfhydryl enzymes by a mixed disulfide. JAMES B. WALKER AND MARGARET S. WALKER.* *Baylor Univ. Coll. of Med.*

2:30 **285.** Microbial transsulfuration and the mechanisms of some enzymatic elimination reactions. MARTIN FLAVIN AND CLARENCE SLAUGHTER.* *Natl. Heart Inst.*

2:45 **286.** Mechanism of rhodanese action I. TOKUMASA NAKAMOTO.* *Univ. of Chicago.*

3:00 **287.** Mechanism of rhodanese action II. JOHN R. GREEN* AND JOHN WESTLEY. *Univ. of Chicago.*

3:15 **288.** Crystalline D-glucose 6-phosphate dehydrogenase. ERNST A. NOLTMANN,* CLARK J. GUBLER AND STEPHEN A. KUBY. *Univ of Wisconsin.*

3:30 **289.** Mechanism of formation of isopentenylpyrophosphate. M. LINDBERG,* CHING YUAN AND K. BLOCH. *Harvard.*

3:45 **290.** ATP-ase activity of crystalline yeast hexokinase. A. KAJI,* K. A. TRAYSER* AND S. P. COLOWICK. *Vanderbilt Med. Sch. and Johns Hopkins Univ.*

4:00 **291.** Active center of carboxypeptidase A. JOSEPH E. COLEMAN* AND BERT L. VALLEE. *Harvard Med. Sch. and Peter Bent Brigham Hosp.*

4:15 **292.** Properties of apocarboxypeptidase A. THOMAS L. COOMBS AND JEAN-PIERRE FELBER.* *Harvard Med. Sch. and Peter Bent Brigham Hosp.*

30. Carbohydrate Metabolism I. Glycogen

MON. P.M.—CONVENTION HALL, STAGE

Chairman: C. F. Cori

1:30 **293.** Quantitative histochemical distribution of glycogen in the rat adrenal and the influence of ACTH. LEONARD J. GREENBERG* AND DAVID GLICK. *Univ. of Minnesota.*

1:45 **294.** Quantitative estimation of the Cori cycle in the human. GEORGE A. REICHARD,* NELSON F. MOURY, JR.,* NORMAN J. HOCHELLA* AND SIDNEY WEINHOUSE. *Inst. for Cancer Res. and Germantown Hosp.*

2:00 **295.** Evidence for the nonequilibration of triosephosphates in the synthesis of liver glycogen. I. A. ROSE, R. KELLERMEYER, R. STJERNHOLM AND H. G. WOOD. *Yale Univ. and Western Reserve Univ.*

2:15 **296.** Desoxycorticosterone acetate (DOCA) and glycogen formation. W. NIEDERMEIER* AND EMMETT B. CARMICHAEL. *Univ. of Alabama.*

2:30 **297.** Evidence for two forms of UDPG glycogen transglucosylase activity in muscle. M. ROSELL-PEREZ* AND J. LARNER. *Western Reserve Univ. Sch. of Med.*

2:45 **298.** Limiting factors for glycogen storage in tumors. VIJAI N. NIGAM* AND HELEN L. MACDONALD.* *Montreal Cancer Inst. and Notre Dame Hosp.*

3:00 **299.** Relation of phosphorylase to glycogen levels in muscle of mice. JOHN B. LYON.* *Emory Univ.*

3:15 **300.** Disproportionation of outer chains of glycogen and amylopectin by phosphorylase. BARBARA ILLINGWORTH,* DAVID H. BROWN AND CARL F. CORI. *Washington Univ.*

3:30 **301.** Biochemical role of liver amylase. W. J. RUTTER AND M. L. ARNOLD. *Univ. of Illinois.*

3:45 **302.** Glycogenolysis in aliquots of glycogen bodies of the chick under the influence of various tissues. A. M. LERVOLD* AND J. SZEPSENWOL. *Univ. of Puerto Rico Sch. of Med.* (Physiol.)

4:00 **303.** Changes in patterns of liver enzymes in embryonic and young rats. H. B. BURCH, E. G. DIAMANT,* A. M. KUHLMAN* AND J. SKERJANCE.* *Washington Univ. Sch. of Med.*

31. Mitochondria and Chloroplasts

MON. P.M.—CONVENTION HALL, ROOM F

Chairman: F. E. Hunter

1:30 **304.** Reversal of electron transport and mitochondrial shrinkage states. LESTER PACKER. *Univ. of Texas.*

1:45 **305.** Sulfhydryl and disulfide groups and the role of C-factor in mitochondrial swelling and contraction. DIETHER NEUBERT.* *Johns Hopkins Univ.*

2:00 **306.** Effect of electron donors, electron acceptors, and uncoupling agents on swelling of isolated liver mitochondria. F. EDMUND HUNTER, JR., A. SCOTT,* E. SMITH,* R. C. MCKNIGHT,* F. GUERRA,* J. FINK,* B. SCHUTZ* AND L. FORD.* *Washington Univ.*

2:15 **307.** Mitochondrial oxidative phosphorylation and swelling during induction of aminonucleoside-nephrosis in the rat. PAUL BARTLETT AND HEIDI SHAEFER.* *Edsel B. Ford Inst. for Med. Res.*

2:30 **308.** Effects of 1-(1-phenyl cyclohexyl) piperidine hydrochloride (sernyl) on rat liver mitochondria. HELEN LEES.* *Lafayette Clin.*

2:45 **309.** Phase microscopic observations of mitochondria and chloroplasts in living spinach mesophyll cells. S. HONDA,* T. HONGLADAROM* AND S. WILDMAN.* *Univ. of California.*

3:00 **310.** Location of the major fraction of leaf protein in chloroplasts. MILTON ZUCKER.* *Connecticut Agric. Exper. Sta.*

3:15 **311.** Characterization and dissociation of a major chloroplastic protein. R. F. BUNTING* AND D. W. KUPKE. *Univ. of Virginia.*

32. Protein Chemistry I

MON. P.M.—CONVENTION HALL, ROOM G

Chairman: W. H. Stein

1:30 **312.** Ammonia formation from amino acids and amides in alkaline solutions. JOHN G. REINHOLD. *Univ. of Pennsylvania.*

1:45 **313.** Tritiation of vasopressin for antidiuretic activity studies. C. T. O. FONG,* L. SILVER,* I. L. SCHWARTZ* AND D. R. CHRISTMAN.* *Brookhaven Natl. Lab. and New York Univ. Med. Sch.*

2:00 **314.** Radiation stability of amino acids and peptides. BERT M. TOLBERT AND MARIE H. KRINKS.* *Univ. of Colorado.*

2:15 **315.** Chemical studies on thyrotropic hormone. MARY E. CARSTEN AND JOHN G. PIERCE. *Univ. of California.*

2:30 **316.** Spectrophotometric interactions of atropine with amino acids and protein. G. D. MAENGWYN-DAVIES AND S. I. OROSZLAN.* *Georgetown Univ. Med. and Dent. Schs.*

2:45 **317.** Electrochemical analysis of protein mixtures on paper. C. A. BROOMFIELD* AND H. A. SCHERAGA. *Cornell Univ.*

3:00 **318.** Zone separation of chemically reacting proteins. GERSON KEGELES AND JOHN L. BETHUNE.* *Clark Univ.*

3:15 **319.** Use of cyanate in the quantitative determination of NH_2-terminal amino acids in proteins. GEORGE R. STARK,* WILLIAM H. STEIN AND STANFORD MOORE. *Rockefeller Inst.*

3:30 **320.** Modification of methionine residues in ribonuclease. NORBERT P. NEUMANN,* STANFORD MOORE AND WILLIAM H. STEIN. *Rockefeller Inst.*

3:45 **321.** Differential estimation of O-methyl, S-methyl and sulfonium-methyl groups. T. F. LAVINE, N. F. FLOYD AND M. S. CAMMAROTI.* *Inst. for Cancer Res.*

4:00 **322.** Reaction of formaldehyde with proteins. LEO J. SAIDEL* AND WILBUR A. INGRAM.* *Chicago Med. Sch.* (Physiol.)

33. Protein Metabolism I

MON. P.M.—AMBASSADOR, RENAISSANCE ROOM

Chairman: H. Borsook

1:30 **323.** Coenzyme A peptides: a role of CoA in protein metabolism. N. W. PENN.* *Albert Einstein Coll. of Med.*

1:45 **324.** Metabolic aspects of amino acid-lipid complexes in hen oviduct. R. W. HENDLER AND E. LOVE. *Natl. Insts. of Health.*

2:00 **325.** In vivo effects of nucleic acid components on tyrosine transaminase activity. GERALD LITWACK AND THOMAS I. DIAMONDSTONE.* *Philadelphia Gen. Hosp. and Univ. of Pennsylvania Grad. Sch. of Med.*

2:15 **326.** Relation of pyridoxine to the basal and adaptive levels of tyrosine-α-ketoglutarate transaminase (TKT) in rat liver. F. ROSEN, R. J. MILHOLLAND* AND D. SOLOMON.* *Roswell Park Mem. Inst.*

2:30 **327.** Dietary control of kidney transamidinase. JOHN F. VAN PILSUM. *Univ. of Minnesota Med. Sch.*

2:45 **328.** Contribution of methionine derived from slowly turning over tissues to liver protein synthesis in lysine deficient rats. A. WAINER* AND A. L. KOCH. *Univ. of Florida, Coll. of Med.*

3:00 **329.** Incorporation in vivo of ethionine into rat proteins. Sex difference and effect of 17-ethyl-19-nortestosterone. H. O. TROWBRIDGE* AND Y. NATORI.* *Univ. of California.*

3:15 **330.** Extent of incorporation of massive doses of amino acids in vivo. HARRY WALTER* AND HERBERT ZIPPER.* *VA Hosp., Brooklyn.*

3:30 **331.** Succinate and amino acid incorporation in biotin deficiency. K. DAKSHINAMURTI* AND S. P. MISTRY.* *Univ. of Illinois.*

3:45 **332.** Effect of leucine-isoleucine antagonism on rate of liver regeneration. PARI D. SPOLTER* AND A. E. HARPER. *Univ. of Wisconsin.*

4:00 **333.** A lag in the maximum incorporation of S^{35}-labeled amino acids in circulating gamma globulin. D. W. TALMAGE, A. SZENTIVANYI* AND J. RADOVICH.* *Univ. of Colorado.* (Immunol.)

4:15 **334.** Effect of cortisone on the incorporation of S^{35}-labeled amino acids into serum and tissue proteins. A. SZENTIVANYI,* D. W. TALMAGE AND J. RADOVICH.* *Univ. of Colorado.* (Immunol.)

34. Steroid Metabolism I

ON. P.M.—AMBASSADOR, VENETIAN ROOM

Chairman: R. Dorfman

1:30 **335.** Proteolipid of wheat flour. C. A. ANKER,* A. C. WAGENKNECHT AND R. A. CLAYTON.* *General Mills.*

1:45 **336.** Liberation of cortisone and cortisol from urine by β-glucuronidase. JOFFRE BROUILLET* AND VERNON R. MATTOX. *Mayo Fndn.*

2:00 **337.** Steroid ester hydrolysis. ERWIN JANSSEN, HAROLD SCHEDL AND JAMES CLIFTON. *State Univ. of Iowa.* (Nutr.)

2:15 **338.** Determination of total 17-OH-corticosteroids. BENJAMIN N. HORWITT. *Bio-Science Labs.*

2:30 **339.** Degradation of ring B of steroids. ELIAHU CASPI, B. TAQUI KHAN* AND W. SCHMID.* *Worcester Fndn. for Exper. Biol.*

2:45 **340.** Mono- and diglucuronides of estriol in human pregnancy urine. CARL B. FELGER* AND PHILIP A. KATZMAN. *St. Louis Univ. Sch. of Med.*

3:00 **341.** Estriol-3, 16β, 17α, a metabolite of 1,3,5(10),16-estratetraen-3-ol in man. BENJAMIN F. STIMMEL AND VESSA D. NOTCHEV.* *Rees-Stealy Clin. Res. Fndn.*

3:15 **342.** Urinary-metabolites of H^3-estradiol-17β of high activity in humans. G. N. GUPTA* AND A. STEINBERG.* *Albert Einstein Med. Ctr.*

3:30 **343.** Isolation and characterization of the metabolites of aldosterone. H. KOHLER,* R. H. HESSE* AND M. M. PECHET.* *Res. Inst. for Med. and Chem.* (Physiol.)

3:45 **344.** In vivo conversion of dehydroisoandrosterone sulfate to androsterone and etiocholanolone glucuronidates. KENNETH D. ROBERTS,* RAYMOND L. VANDEWIELE* AND SEYMOUR LIEBERMAN. *Columbia Univ.*

4:00 **345.** Metabolism and localization of highly radioactive androstenedione in the rat. W. H. PEARLMAN AND M. R. J. PEARLMAN.* *Harvard Med. Sch. and Peter Bent Brigham Hosp.*

35. Tumors

MON. P.M.—AMBASSADOR, SURF ROOM

Chairman: H. Busch

1:30 **346.** Relationship of Bence Jones protein to myeloma protein formed in the same tumor and to normal gamma globulin. JOHN L. FAHEY AND BRIGITTE A. ASKONAS.* *Natl. Inst. for Med. Res. and Natl. Cancer Inst.* (Physiol.)

1:45 **347.** Proteolytic enzyme activity and degree of malignancy of human gynecological tumors. CARLTON BLACKWOOD* AND INES MANDL. *Columbia Univ.*

2:00 **348.** Electrophoretical studies in cyst fluids from brain tumors. M. SPIEGEL-ADOLF, H. T. WYCIS* AND L. STRAUMANIS.* *Temple Univ. Med. Ctr.*

2:15 **349.** Biochemical effects of x-irradiation of mouse ascites cancer cells. EUGENE GARCIA,* ELMON COE,* WILLIAM LARSON, CHARLES SLATER* AND RALPH W. MCKEE. *Univ. of California Med. Sch.*

2:30 **350.** Glycolysis by sarcoma-180 of mice treated with 6-mercaptopurine. P. J. FODOR, D. A. CLARKE AND O. BODANSKY. *Sloan-Kettering Inst. for Cancer Res.*

2:45 **351.** Systemic effects of tumors in the rat. L. R. CERECEDO, SR., J. M. SMITH AND J. VICENTE.* *Fordham Univ. and Univ. of Puerto Rico.*

3:00 **352.** Purification of RP_2-L: an acid-soluble nuclear protein found in neoplastic tissues. JOSEPH R. DAVIS* AND HARRIS BUSCH. *Baylor Univ. Coll. of Med.*

3:15 **353.** Distribution of radioactivity in the 'phospholipid' fraction of normal and tumor-bearing mice treated with putrescine-C^{14}. G. J. GOLDENBERG,* B. L. LOUDAS,* R. J. SALMON* AND S. SCHWARTZ. *Univ. of Minnesota Med. Sch.*

3:30 **354.** Nonspecific carcinogenesis related to smooth surfaces. FRITZ BISCHOFF AND GEORGE BRYSON.* *Santa Barbara Cottage Hosp. Res. Inst.*

3:45 **355.** Inhibition of growth of chick embryo in shell-less culture. WILLIAM L. WILLIAMS AND M. A. BOONE. *Univ. of Georgia.*

Pharmacology Society Sessions—Monday, 9:00 a.m.

36. Cardiovascular Pharmacology I

MON. A.M.—DENNIS, BORTON HALL

Chairman: D. E. Hutcheon

9:00 **356.** Arterial pressure changes by drugs injected into isolated pulmonary circulation in dogs. KOICHIRO TAKASAKI.* *Med. Coll. of Georgia.*

9:15 **357.** Effects of drugs on bronchial circulation. J. MARTINEZ L. DE LETONA,* R. CASTRO DE LA MATA* AND D. M. AVIADO. *Univ. of Pennsylvania.* (Physiol.)

9:30 **358.** Mechanism of the depressor response to tryptamine and serotonin in the chicken. R. D. BUNAG* AND E. J. WALASZEK. *Kansas Univ.*

9:45 **359.** Acute systemic and coronary hemodynamic effects of trimethidinium. S. AFONSO,* G. G. ROWE, C. J. CHELIUS,* J. LOPEZ* AND C. W. CRUMPTON. *Univ. of Wisconsin.*

10:00 **360.** Effects of 2-aminoethyl nitrate-p-toluene sulfonate in angina pectoris. ARTHUR RUSKIN. *Univ. of Texas Med. Br.* (Physiol.)

10:15 **361.** Pharmacology and toxicology of isosorbide dinitrate (ISDN). DAVID H. BAEDER. *Ives-Cameron Co.*

10:30 **362.** Effects of isosorbide dinitrate and pentaerythritol tetranitrate on coronary blood flow. MARIO D. ACETO,* WILLIAM J. KINNARD* AND JOSEPH P. BUCKLEY. *Univ. of Pittsburgh.*

10:45 **363.** Chloroglyceryl dinitrate as a coronary artery dilator. RAYMOND M. BURGISON, GORDON G. LU AND JOHN C. KRANTZ, JR. *Univ. of Maryland.*

11:00 **364.** Influence of MAO inhibitors on the adrenal medullary responses to chemical stimulation. JOHN GATGOUNIS* AND JOHN AYCOCK.* *Med. Coll. of South Carolina.*

11:15 **365.** Effect of anoxia and amine oxidase inhibitors on myocardial necrosis induced by isoproterenol. GERHARD ZBINDEN. *Hoffmann-La Roche.*

11:30 **366.** Hemorrhagic hypotensive irreversible shock in the cat. EUGENE D. BRAND. *Univ. of Virginia.*

37. Cancer

MON. A.M.—DENNIS, CRYSTAL BALLROOM

Chairman: A. D. Welch

9:00 **367.** Suppression of uptake of L-lysine-U-C^{14} into nuclear proteins by 5-bis-(2′-chloroethyl)-aminouracil. HARRIS BUSCH, JOSEPH R. DAVIS* AND GEORGE R. HONIG.* *Baylor Univ.*

9:15 **368.** Potentiation of the anti-leukemic effects of 2-amino thiadiazole by isonicotinamide and derivatives. J. H. BURCHENAL, H. F. OETTGEN,* J. A. PURPLE* AND V. COLEY.* *Sloan-Kettering Inst.* (Nutr.)

9:30 **369.** Metabolism of radiophosphorus in mouse epidermis. C. G. HUGGINS, A. A. WERDER* AND V. E. SCHOLES.* *Kansas Univ.*

9:45 **370.** Inhibition of labeling of mitochondrial proteins by colchicine. ELLI KOHEN* AND HARRIS BUSCH. *Baylor Univ.*

10:00 **371.** Reactions of C^{14}-labeled thio-TEPA with components of normal and tumor tissue of rats. L. B. MELLETT AND L. A. WOODS. *Univ. of Michigan.*

10:15 **372.** Mitotic activity and cell size during carcinogenesis. B. JACKSON.* *Lederle Labs. Div.*

10:30 **373.** Effect of organic arsenic and a bacterial polysaccharide in the chemotherapy of malignant neoplasms. SAMUEL ROSNER.* *Gouverneur City Hosp.*

10:45 **374.** Utility of carcinogen induced rat mammary cancer as a chemotherapeutic screening device. A. H. OWENS, JR. AND GEORGE J. BUSCH.* *Johns Hopkins Univ. Sch. of Med.*

11:00 **375.** Biochemical and morphologic heterogeneity of a mast cell tumor. CHARLES E. MENGEL* AND JERRY S. TRIER.* *Natl. Cancer Inst.*

11:15 **376.** Cytolysis: immunological aspects of carcinolytic agents. ROBERT WILLHEIM, BENEDICT B. O'MALLEY* AND LOUIS RAMAZZOTTO.* *Inst. of Appl. Biol. and Fairleigh Dickinson Univ.* (Immunol.)

11:30 **377.** Antigenic action of cancer cells in carcinolysis. MARIANNE SORTER,* PAUL FLUSS,* BENEDICT B. O'MALLEY* AND WILLIAM MALAY.* *Inst. of Appl. Biol. and Fairleigh Dickinson Univ.* (Immunol.)

11:45 **378.** Cytolysis: role of nucleic acids. P. FLUSS,* ROBERT WILLHEIM AND MARIANNE SORTER.* *Inst. of Appl. Biol. and Fairleigh Dickinson Univ.* (Immunol.)

12:00 **379.** Subconvulsive audiogenic stress effect on chemical carcinogenesis and transplanted tumors. HAROLD SILVERSTEIN,* FLORENCE LAZERE,* ALLAN SANDLER* AND SUSAN GRAVES.* *Waldemar Med. Res. Fndn.*

38. Cellular and Biochemical Pharmacology I

MON. A.M.—DENNIS, GARDEN LOUNGE

Chairman: J. A. Bain

9:00 **380.** Comparative biochemistry of cell wall peptide synthesis in bacteria. J. L. STROMINGER, E. ITO* AND R. H. THRENN.* *Washington Univ.*

9:15 **381.** Enzyme inhibition and renal effect in the carbonic anhydrase (CA) system. THOMAS H. MAREN. *Univ. of Florida.*

9:30 **382.** Vitamin K deficiency and oxidative phosphorylation. S. S. PARMAR* AND J. LOWENTHAL.* *Univ. of Manitoba.*

9:45 **383.** Rat liver O-methyl transferase as a drug screening tool. A. A. WYKES,* J. D. TAYLOR AND G. J. LEWIS.* *Abbott Labs.*

10:00 **384.** Criteria of the nature of enzyme inhibition—monoamine oxidase and cholinesterase inhibitors. MARK NICKERSON AND SURENDRA S. PARMAR.* *Univ. of Manitoba.*

10:15 **385.** Non-drug induced changes in blood serotonin. PAUL GORDON.* *Northwestern Univ. and VA Research Hosp.*

10:30 **386.** Inhibition of sterol biosynthesis by analogs of mevalonic acid. JOHN MORROW STEWART* AND D. W. WOOLLEY. *Rockefeller Inst.*

10:45 **387.** Inhibition by triparanol (MER-29) of microsomal enzyme systems that metabolize drugs. JAMES R. GILLETTE AND LILLEMOR DAVENPORT.* *Natl. Insts. of Health.*

11:00 **388.** Comparative effects of triparanol, *d*-thyroxin and nicotinic acid on body cholesterol metabolism in man. W. HOLLANDER* AND A. V. CHOBANIAN.* *Massachusetts Mem. Hosps.*

11:15 **389.** Determination of the minimum dose of nicotinic acid for maximal serum cholesterol depression. PHILIP LISAN,* WILBUR OAKS* AND SAMUEL BASCH.* *Hahnemann Med. Coll.*

11:30 **390.** Interrelationships between isocarboxazid (Marplan), benzylhydrazine and monoamine oxidase. MORTON A. SCHWARTZ.* *Hoffmann-La Roche.*

11:45 **391.** Choline acetylase inhibition by DDA (dichlorodiphenylacetic acid), a metabolite of DDT. MARVIN J. BLEIBERG* AND MICHAEL CEFARATTI.* *Jefferson Med. Coll.*

Pharmacology Society Sessions—Monday, 1:30 p.m.

39. Cardiovascular Pharmacology II

MON. P.M.—DENNIS, BORTON HALL

Chairman: J. S. Robb

1:30 **392.** Portal vein hyperkalemia caused by vasopressor drugs. PHILIP J. SHEA* AND MAYNARD B. CHENOWETH. *Dow Chemical Co.*

1:45 **393.** Early potentiation of vascular responses to norepinephrine by intravenous guanethidine. FRANCOIS M. ABBOUD,* JOHN W. ECKSTEIN* AND SANTIAGO A. PEREDA.* *State Univ. of Iowa.*

2:00 **394.** Hypotensive properties of triethylammonium-ethyl 3,4,5-trimethoxybenzoate iodide (TTB). J. D. MCCOLL AND P. SACRA.* *Frank W. Horner, Ltd.*

2:15 **395.** Human pharmacology studies with W-583. MICHAEL G. MULINOS, SEMEON SALTEFORS,* LINN J. BOYD AND G. ARNOLD CRONK.* *New York Med. Coll. and Syracuse Univ.*

2:30 **396.** W-583 metabolism. J. F. DOUGLAS,* B. J. LUDWIG,* T. GINSBERG* AND F. M. BERGER. *Wallace Labs.*

2:45 **397.** A centrally acting blood pressure lowering agent (W-583). F. M. BERGER AND S. MARGOLIN. *Wallace Labs.*

3:00 **398.** W-583, a centrally acting anti-pressor agent. M. KLETZKIN* AND F. M. BERGER. *Wallace Labs.*

3:15 **399.** Effect of some hypotensive agents on renal plasma flow in the unanesthetized dog. G. L. WAGLE* AND A. J. PLUMMER. *Ciba Pharmaceut. Products.*

3:30 **400.** Pharmacologic characterization of the cardiovascular responses to xanthiol. M. FINKELSTEIN, K. DELANEY,* C. W. SCOTT* AND S. MIKNIUS.* *Chas. Pfizer.*

3:45 **401.** Evidence for a central mechanism in angiotensin induced hypertension. JOSEPH P. BUCKLEY AND ROBERT K. BICKERTON.* *Univ. of Pittsburgh.*

40. Nerve-Muscle

MON. P.M.—DENNIS, CRYSTAL BALLROOM

Chairman: D. B. Taylor

1:30 **402.** Potentiation of smooth muscle stimulants by lysergic acid diethylamide (LSD). C. M. SMITH* AND E. J. WALASZEK. *Univ. of Kansas.*

1:45 **403.** Action of d-tubocurarine on the motor nerve terminal. FRANK G. STANDAERT.* *Cornell Univ.*

2:00 **404.** Increased sensitivity of partially and completely denervated frog's sartorius muscle to cholinergic drugs. G. B. FRANK. *Univ. of Manitoba.*

2:15 **405.** Tetanus toxin and skeletal muscle. VENKATRAY G. PRABHU,* Y. T. OESTER AND JOHN J. FUDEMA.* *Loyola Univ.*

2:30 **406.** Reflex response to intra-arterial nociception with bradykinin. FRANK GUZMAN,* C. BRAUN,* R. K. S. LIM, E. W. HORTON* AND G. D. POTTER.* *Miles Labs.*

2:45 **407.** Membrane potentials in venous smooth muscle. IAN C. RODDIE* AND SAMUEL KIRK.* *Univ. of Washington.*

3:00 **408.** Localization of glyceraldehyde-3-phosphate dehydrogenase in roach muscle by staining with fluorescent antibody. E. W. EMMART AND S. S. SPICER.* *Natl. Insts. of Health.*

3:15 **409.** Opposite effects on neuromuscular transmission by facilitatory drugs. A. S. KUPERMAN.* *New York Univ.*

3:30 **410.** Excitation constants and conduction velocity of muscles from normal and myotonic goats. W. H. HERZOG.* *Univ. of Cincinnati.*

3:45 **411.** Effects of bacterial endotoxin and certain hormones on oxidative metabolism of rat diaphragm. A. D. RUBIN,* J. CASCARANO* AND B. W. ZWEIFACH. *New York Univ.*

41. Cellular and Biochemical Pharmacology II

MON. P.M.—DENNIS, GARDEN LOUNGE

Chairman: K. P. DuBois

1:30 **412.** Timing in trauma effects on S_{35} L-cysteine incorporated into liver GSH. LYLE V. BECK AND SARAH C. KALSER.* *Univ. of Pittsburgh.*

1:45 **413.** Interrelationships of protein synthesis and carbohydrate formation in insulin deficiency. S. R. WAGLE* AND MILTON STERN.* *Indiana Univ.*

2:00 **414.** Factors influencing the postmortem concentration of brain lactic acid. L. R. GOLDBAUM AND A. M. DOMINGUEZ.* *Armed Forces Inst. of Pathology.*

2:15 **415.** Drug metabolism in alloxan-diabetic rats. LARRY G. HART,* ROBERT L. DIXON* AND JAMES R. FOUTS. *State Univ. of Iowa.*

2:30 **416.** Drug metabolism in regenerating liver. JAMES R. FOUTS, ROBERT W. SHULTICE* AND ROBERT L. DIXON.* *State Univ. of Iowa.*

2:45 **417.** Acid-base comparisons between 8- and 25-day-old rats. C. DEAN WITHROW,* W. D. WILCOX* AND DIXON M. WOODBURY. *Univ. of Utah.*

3:00 **418.** Blood cephalins. MARTIN M. NOTHMAN AND SAMUEL PROGER.* *New England Ctr. Hosp. and Tufts Univ.*

3:15 **419.** Effect of nicotinamide and nicotinic acid on DPN synthesis. H. M. REDETZKI,* F. A. O'BOURKE* AND A. RUSKIN. *Univ. of Texas Med. Br.*

3:30 **420.** Effect of serotonin and of cyclic 3–5 AMP on phosphofructokinase from the liver fluke Fasciola hepatica. TAG E. MANSOUR, NANCY A. LEROUGE* AND JOAN M. MANSOUR.* *Louisiana State Univ.*

3:45 **421.** Effect of hydrocortisone and other steroids on the growth of mouse lymphoma P-388 in vitro. J. C. GABOUREL AND L. ARONOW. *Stanford Univ.*

4:00 **422.** Recovery from antifolate inhibition of dihydrofolic reductase and purine nucleotide biosynthesis in leukemic mouse spleen. A. W. SCHRECKER,* J. A. R. MEAD,* E. J. CRAWFORD,* M. FRIEDKIN AND A. GOLDIN. *Natl. Cancer Inst. and Tufts Univ.*

4:15 **423.** Reversal of toxicity and antileukemic activity of amethopterin by reduced derivatives of folic acid. J. A. R. MEAD,* J. M. VENDITTI,* A. W. SCHRECKER* AND A. GOLDIN. *Natl. Cancer Inst.*

Pathology Society Sessions—Monday, 9:00 a.m.

42. Transplantation

MON. A.M.—RITZ-CARLTON, RITZ HALL

Chairmen: R. H. Andresen; G. Hass

9:00 **424.** Mortality, lymphoid organ weight change and pathology in F_1 hybrid mice injected with parental lymphoid tissue. W. G. FISCUS,* B. T. MORRIS,* J. SESSION* AND J. J. TRENTIN. *Baylor Univ.*

9:15 **425.** Altered immunologic reactivity of cells recovered from parental strain whole thymus gland grafted into F_1 hybrid hosts. ANDRÉE DUBERT* AND HENRY S. KAPLAN. *Stanford Univ.* (Immunol.)

9:30 **426.** Degree of skin graft tolerance and lymphoid chimerism following injection of adult spleen cells into newborn mice. J. J. TRENTIN AND J. SESSION.* *Baylor Univ.*

9:45 **427.** Immunological reactions by F_1 hybrid mice against grafted parental strain tissues. GUSTAVO CUDKOWICZ.* *Oak Ridge Natl. Lab.*

10:00 **428.** Nucleic acid synthesis in the regional lymph nodes and spleen during skin homograft rejection. J. C. PIERCE,* W. R. MEEKER, JR.* AND R. L. VARCO.* *Univ. of Minnesota.*

10:15 **429.** Modification of classical homologous tissue reactions by transfusion of blood after grafting. C. W. MONROE,* R. H. ANDRESEN, G. M. HASS, D. A. MADDEN* AND S. SWARTZBAUGH.* *Presbyterian-St. Luke's Hosp., Chicago.*

10:30 **430.** Absence of avascular postparabiotic homologous tissue reactions in hosts receiving serial transfusions of donor's blood prior to grafting. V. TRUCHLY,* R. H. ANDRESEN, G. M. HASS, D. A. MADDEN* AND S. SWARTZBAUGH.* *Presbyterian-St. Luke's Hosp., Chicago.*

10:45 **431.** Accelerated skin graft rejection in humans preimmunized with leukocytes. ELI A. FRIEDMAN,* J. WALDEN RETAN,* DAVID C. MARSHALL,* LAWRENCE B. HENRY* AND JOHN P. MERRILL. *Harvard Med. Sch.* (Pharmacol.)

11:00 **432.** Histological and clinical correlations in skin homograft rejection in man. L. HENRY,* D. C. MARSHALL,* ELI A. FRIEDMAN* AND G. J. DAMMIN. *Peter Bent Brigham Hosp. and Harvard Med. Sch.*

11:15 **433.** Modification of response of mice to heterografts by ascites. R. E. MCCARTHY.* *Children's Cancer Res. Fndn. and Harvard Med. Sch.*

11:30 **434.** Transplantation of the rat kidney. PAUL NATHAN,* EDWARD GONZALEZ,* LAWRENCE J. WILCHINS* AND BENJAMIN F. MILLER. *Univ. of Cincinnati.* (Biochem.)

11:45 **435.** Effect of antimetabolites on prolonging functional survival of canine renal homografts: 6-mercaptopurine, 8-azaguanine. C. F. ZUKOSKI,* H. M. LEE* AND D. M. HUME. *Med. Coll. of Virginia.*

12:00 **436.** Habitual abortion: an expression of accelerated rejection of the placental graft. W. A. BARDAWIL AND D. MARSHALL.* *St. Margaret's Hosp., Boston.*

43. Tissue Response I

MON. A.M.—RITZ-CARLTON, CARLTON ROOM

Chairmen: D. M. Angevine; R. D. Coye

437. Comparison of growth potential of the growth-promoting factor of tissue in young and adult rabbits. VALY MENKIN.† *Univ. of Kansas City.*

9:00 **438.** Quantitation of the inflammatory response. E. ASCHHEIM* AND B. W. ZWEIFACH.* *New York Univ.* (Pharmacol.)

9:15 **439.** Route of capillary leakage during passive cutaneous anaphylaxis reaction. RAYMOND D. A. PETERSON.* *Univ. of Minnesota.*

9:30 **440.** Effects of serotonin and their inhibition: morphologic observations on the vasculature of the mouse ear. G. E. STROBEL,* J. MCINTOSH* AND J. P. KULKA. *Harvard Med. Sch. and Robert B. Brigham Hosp.*

9:45 **441.** Effect of histamine and serotonin on vascular permeability. GUIDO MAJNO, GUTTA I. SCHOEFL* AND GEORGE E. PALADE.* *Harvard Med. Sch. and Rockefeller Inst.*

10:00 **442.** Effect of magnesium deficiency upon tissue histamine and inflammation in rats. GAÉTAN JASMIN, PIERRE BOIS* AND A. GASCON.* *Univ. of Montreal.* (Physiol.)

10:15 **443.** Acid phosphatase activity of reticuloendothelial cells of genetically resistant and susceptible mice during infection with murine salmonellosis. M. WACHSTEIN, D. H. BOEHME* AND H. A. SCHNEIDER. *St. Catherine's Hosp., Cornell Med. Ctr., and Rockefeller Inst.*

10:30 **444.** A comparison of the ultrastructure sequences in normal vs. scorbutic wounds. RUSSELL ROSS* AND EARL P. BENDITT. *Univ. of Washington.*

10:45 **445.** Effect of magnetic fields on wound healing in mice. LEO GROSS* AND LAWRENCE W. SMITH. *Waldemar Med. Res. Fndn.*

11:00 **446.** Interaction of chlorpromazine with epiphyseal cartilage of rachitic rats. ALFRED F. HARRIS* AND C. V. TEODORU. *Isaac Albert Res. Inst.*

11:15 **447.** Epiphyseal arrest following systemic and intramedullary papain injection. MONROE SCHNEIDER.* *Isaac Albert Res. Inst.*

† Deceased December 12, 1960.

44. Films of Interest to Pathologists

RITZ-CARLTON, RITZ HALL

MON., 12:30 P.M.

(1) Normal and abnormal platelets. MARCEL BESSIS. (E. R. Squibb and Son, Distributor.)

(2) An introduction to arthropod borne encephalitis (1957). *Communicable Disease Center, Public Health Service.*

TUES., 12:30 P.M.

(1) Anomalies of the aortic arch. *American College of Surgeons.* (E. R. Squibb and Son, Distributor.)

(2) Dynamics of aortic valve disease. R. F. KELLEY, F. GOODALE, JR., B. CASTLEMAN, J. G. SCANNELL. (*Mass. Gen. Hosp.*)

WED., 12:30 P.M.

(1) Ocular inflammations. NORMAN P. SCHLER. (Pfizer International Distributor.)

(2) Marrow puncture. *Imperial Chemicals Ind., Ltd., England.*

Pathology Society Sessions—Monday, 1:30 p.m.

45. Cardiovascular I

MON. P.M.—RITZ-CARLTON, RITZ HALL

Chairmen: R. W. Wissler; B. Spargo

1:30 **448.** Histologic changes in the arterial wall during vasoconstriction. BERNARD M. WAGNER, ROBERT VAN CITTERS* AND ROBERT RUSHMER. *New York Med. Coll. and Univ. of Washington.*

1:45 **449.** A method for precise arterial injury. DAVID H. BLANKENHORN. *Univ. of Southern California.*

2:00 **450.** Sulfa drug hypersensitivity in rabbits and early arteriosclerosis. O. SAPHIR, M. TELISCHI* AND L. OHRINGER.* *Michael Reese Hosp.*

2:15 **451.** Vascular lesions in copper deficient swine. W. H. CARNES, G. S. SHIELDS,* G. E. CARTWRIGHT AND M. M. WINTROBE. *Univ. of Utah.*

2:30 **452.** Effect of nicotin on rabbits' normal and diseased cardiovascular tissue cultures. O. J. POLLAK AND TATSUO KOKUBU.* *Dover, Delaware.*

2:45 **453.** Effect of intravenous glucosamine-HCl on the aortas of normal and diabetic rabbits. GORDON R. HENNIGAR AND HARVEY P. KATZ.* *State Univ. of New York.*

3:00 **454.** Serum elastase inhibitor in chronic metabolic and infectious diseases of the aged including temporal arteritis. R. F. GILFILLAN,* A. J. SBARRA* AND W. A. BARDAWIL. *St. Margaret's Hosp. and Tufts Univ.*

3:15 **455.** Metabolism of arterial tissue. A. J. SBARRA,* W. SHIRLEY,* R. F. GILFILLAN* AND W. A. BARDAWIL. *St. Margaret's Hosp. and Tufts Univ.*

3:30 **456.** Isolation of a glycoprotein from bovine aorta. A. F. FISHKIN,* G. S. BERENSON* AND VELMA S. KANTROW.* *Louisiana State Univ.*

3:45 **457.** Protection by late pregnancy against acute hyperparathyroidism. DAVID LEHR AND MARILYN KRUKOWSKI.* *New York Med. Coll.* (Pharmacol.)

4:00 **458.** Influence of acute hyperparathyroidism of pregnant rats upon their conceptus. MARILYN KRUKOWSKI* AND DAVID LEHR. *New York Med. Coll.* (Pharmacol.)

46. Liver I

MON. P.M.—RITZ-CARLTON, CARLTON ROOM

Chairmen: W. S. Hartroft; R. M. O'Neal

1:30 **459.** Development of the septa in the pig liver. R. J. STEIN,* A. VATTER,* F. VOLINI* AND G. KENT. *Abbott Labs. and West Suburban Hosp.*

1:45 **460.** Pattern of glycogen distribution in the rat liver. K. ATERMAN AND B. CORRINS.* *Dalhousie Univ. and Manchester Univ.*

2:00 **461.** Hepatic mesenchymal cells in liver injury. FENTON SCHAFFNER, HANS POPPER, TIBOR BARKA* AND FIORENZO PARONETTO.* *Mt. Sinai Hosp., New York.*

2:15 **462.** Liver cell proliferation due to biliary obstruction. I. Autoradiographic, bacteriologic, and histologic studies. RICHARD A. MACDONALD AND GISELLE PECHET.* *Mallory Inst. of Pathol. and Harvard Med. Sch.*

2:30 **463.** Absence of a blood-borne factor affecting liver regeneration in paired and triplet parabiotic rats. ADRIANNE E. ROGERS,* JAMES A. SHAKA,* GISELLE PECHET* AND RICHARD A. MACDONALD. *Mallory Inst. of Pathol. and Harvard Med. Sch.*

2:45 **464.** Chromatographic studies of soluble fraction from regenerating rat liver. WINFIELD S. MORGAN. *Massachusetts Gen. Hosp.*

3:00 **465.** Influence of carbon tetrachloride on hepatic respiratory metabolism. M. E. TRACHT* AND D. G. TRACHT.* *Mt. Sinai Hosp., New York.*

3:15 **466.** Inhibition of phosphorylcholine-glyceride transferase in the livers of rats poisoned with carbon tetrachloride. G. F. WILGRAM, S. W. SMITH,* D. J. INGLE AND E. P. KENNEDY. *Univ. of Chicago and Harvard Med. Sch.*

3:30 **467.** Effect of ethionine on epinephrine metabolism in rat liver. FERENC HUTTERER.* *Mt. Sinai Hosp., New York.*

3:45 **468.** Pathogenesis of experimental fatty infiltration of the liver. B. LOMBARDI* AND R. O. RECKNAGEL.* *Western Reserve Univ.*

4:00 **469.** Alcohol tolerance in cirrhotic rats. A. MIKATA,* A. A. DIMAKULANGAN* AND W. S. HARTROFT. *Washington Univ.*

Pathology Society Coffee Lounge

Monday through Friday, 8:30 A.M.–5:00 P.M., Ritz-Carlton, Game Room

Nutrition Society Sessions—Monday, 9:00 a.m.

47. Lipids and Steroids

MON. A.M.—AMBASSADOR, "22" CLUB

Chairmen: P. György; L. W. Kinsell

9:00 **470.** Metabolic effects of low-fat feeding in premature infants. THEODORE C. PANOS, BARBARA STINNETT,* EVELYN CROSS* AND ALICE G. BEARD.* *Univ. of Arkansas Med. Ctr.*

9:15 **471.** Metabolic changes associated with dietary carbohydrate and fat. M. ISABEL IRWIN* AND DORIS D. TAYLOR.* *Univ. of Arkansas and U. S. Dept. of Agriculture.*

9:30 **472.** A lipid-carbohydrate "complex" in plasma. GEORGE D. MICHAELS,* ROBERT E. VISINTINE,* SHANTILAL SHAH,* JOYCE CONKLIN* AND LAURANCE W. KINSELL. *Highland-Alameda Co. Hosp.*

9:45 **473.** Changes in fatty acid components of adipose tissue with diet. ROSEMARIE OSTWALD,* RUTH OKEY AND ANGELA SHANNON.* *Univ. of California.*

10:00 **474.** Fatty acid components of plasma and liver lipids as affected by diet. RUTH OKEY, ROSEMARIE OSTWALD,* E. LIS* AND JOAN TINOCO.* *Univ. of California.*

10:15 **475.** Separation of bile acid conjugates by ion exchange chromatography. B. A. GORDON,* A. KUKSIS* AND J. M. R. BEVERIDGE. *Queen's Univ.*

10:30 **476.** An integrated scoring method for protein activity index of steroids (SPAI). ANTHONY A. ALBANESE, EDWARD J. LORENZE* AND LOUISE A. ORTO.* *Burke Fndn.* (Biochem.)

10:45 **477.** Anabolic activity of isoxazole-substituted androstane-derived steroids. AARON ARNOLD, G. O. POTTS,* A. L. BEYLER* AND R. O. CLINTON.* *Sterling-Winthrop Res. Inst.*

11:00 **478.** Inhibition of β-hydroxysteroid dehydrogenase by steroids. RICHARD A. FERRARI* AND AARON ARNOLD. *Sterling-Winthrop Res. Inst.*

11:15 **479.** Effects of growth hormone and diethylstilbestrol on nitrogen metabolism in ruminants. L. BREUER, R. L. PRESTON AND W. H. PFANDER. *Univ. of Missouri.*

11:30 **480.** Effects of hormone injections on milk production in underfed rats. ALBERT RATNER* AND JOSEPH MEITES. *Michigan State Univ.*

48. Nutrition—General

MON. A.M.—AMBASSADOR, ROTUNDA

Chairmen: J. H. Roe; C. R. Treadwell

9:00 **481.** Delivery of the germfree pig. JEROME J. LANDY* AND RUSSELL L. SANDBERG.* *Univ. of Arkansas Med. Ctr.* (Physiol.)

9:15 **482.** Improved method for terminal bleeding of experimental rats. C. H. LUSHBOUGH AND SHELDON W. MOLINE.* *American Meat Inst. Fndn. and Univ. of Chicago.*

9:30 **483.** Estimation of metabolizable energy for preadolescent children. CHARLOTTE W. BEDELL,* BARTON R. FARTHING* AND DOROTHY S. MOSCHETTE. *Louisiana State Univ.*

9:45 **484.** Effects of severe carbohydrate and caloric restriction on normal male subjects. DOROTHY R. JUTTON.* *Univ. of Wisconsin.*

10:00 **485.** Random and voluntary activity following prolonged dietary restriction. D. A. OLEWINE* AND C. H. BARROWS, JR. *Natl. Insts. of Health and Baltimore City Hosps.* (Physiol.)

10:15 **486.** Cellulose, starch and nitrogen levels for maximum cellulose digestion by rumen organisms in vitro. R. L. PRESTON AND W. H. PFANDER. *Univ. of Missouri.*

10:30 **487.** Factors affecting nitrate utilization by sheep. W. H. PFANDER, A. L. DUNGAN,* J. L. KETCHUM,* G. B. GARNER* AND G. B. THOMPSON.* *Univ. of Missouri.*

10:45 **488.** Rates of acetate metabolism in fed sheep. JOHN R. SABINE* AND B. CONNOR JOHNSON. *Univ. of Illinois.*

11:00 **489.** Carbohydrate and roughage requirements of crickets. P. F. NEVILLE* AND T. D. LUCKEY. *Univ. of Missouri.*

11:15 **490.** Biosynthesis of terpenes in mint. W. D. LOOMIS,* J. BATTAILE* AND ALICE BURBOTT.* *Oregon State Coll.*

11:30 **491.** Taste vs. 'calories' as modulators of glucose intake. HARRY L. JACOBS. *Univ. of Rochester.* (Physiol.)

Nutrition Society Sessions—Monday, 1:30 p.m.

49. Vitamin B_{12}

MON. P.M.—AMBASSADOR "22" CLUB

Chairmen: W. J. Darby; W. Unglaub

1:30 **492.** Role of vitamin B_{12} in intermediary metabolism. DEBAJIT K. BISWAS* AND B. CONNOR JOHNSON. *Univ. of Illinois.*

1:45 **493.** Metabolism of intrinsic factor concentrate (IFC) and IFC-radio B_{12}-complex by the rat. FRANK J. TRONCALE,* HANS J. HANSEN* AND O. NEAL MILLER. *Tulane Univ.*

2:00 **494.** Metabolism of $C^{14}N$-cyanocobalamin ($C^{14}N$-B_{12}) and $C^{14}N$-cyanocobalamin-intrinsic factor concentrate complex ($C^{14}N$-B_{12}-IFC). HANS J. HANSEN* AND JOHN W. COFFE.* *Touro Infirmary and Tulane Univ.*

2:15 **495.** Urinary excretion of hydroxy-(I), cyanocobalamin (II) and 5,6-dimethylbenzimidazole-B_{12} coenzyme (III) after intramuscular injection in man. GREGORIO D. SAMSON,* SAMUEL D. J. YEH* AND BACON F. CHOW. *Johns Hopkins Univ.* (Immunol.)

2:30 **496.** Applicability of hydroxocobalamin as a long-acting vitamin B_{12}. G. B. J. GLASS, H. R. SKEGGS,* D. H. LEE,* E. L. JONES* AND W. W. HARDY.* *New York Med. Coll. and Merck Sharp & Dohme Res. Labs.* (Physiol.)

2:45 **497.** Heme and porphyrin formation in nucleated erythrocyte fractions. VISHWANATH M. SARDESAI,* SALLY A. DOEHR* AND JAMES M. ORTEN. *Wayne State Univ.*

3:00 **498.** Absorption of vitamin B_{12} by iron deficient rats. SAMUEL D. J. YEH,* ASUNCION R. GABRIEL* AND BACON F. CHOW. *Johns Hopkins Univ.*

3:15 **499.** Serum vitamin B_{12} in infancy. A. LEONARD

LUHBY, ROBERT FELDMAN,* JAMES F. MARLEY,* OESMAN ODANG* AND JACK M. COOPERMAN. *New York Med. Coll.*

3:30 **500.** Vitamin B_{12} and the thyroid in reproduction of rats. BACON F. CHOW, KUNIO OKUDA,* ERNESTINE B. MCCOLLUM AND JENG M. HSU. *Johns Hopkins Univ. and VA Hosp.*

3:45 **501.** Adsorption of vitamin $B_{12}Co^{60}$ by marine bacteria. S. C. LIPPINCOTT* AND A. H. LAWTON. *VA Ctr.* (Physiol.)

50. Minerals I: Trace

MON. P.M.—AMBASSADOR, ROTUNDA

Chairmen: G. Combs; W. C. Supplee

1:30 **502.** Effect of zinc deficiency on content of pyridine nucleotides in chick and rat livers. M. L. WU CHANG, R. M. FORBES, H. M. SCOTT AND B. CONNOR JOHNSON. *Univ. of Illinois.*

1:45 **503.** Extraction of zinc compounds from sesame meal and their availability to the chick. D. E. TURK* AND J. G. LEASE.* *Clemson Coll.*

2:00 **504.** Is molybdenum toxicity related to osteolathyrism? WALDEMAR DASLER AND RUSSELL V. MILLISER.* *Chicago Med. Sch.*

2:15 **505.** Mo-99 in swine fed high levels of calcium. R. G. BUESCHER* AND M. C. BELL. *UT-AEC Agricultural Res. Lab.*

2:30 **506.** Molybdenum toxicity in the developing chick embryo. PAUL D. LEPORE AND RUSSELL F. MILLER. *Virginia Polytechnic Inst.*

2:45 **507.** Liver copper and molybdenum concentrations of rats fed molybdenum and sulfate. G. L. BRINKMAN AND RUSSELL F. MILLER. *Virginia Polytechnic Inst.*

3:00 **508.** Influence of dietary sodium levels on maternal and fetal tissues and fluids in the deoxypyridoxine-fed rat. AVANELLE KIRKSEY,* RUTH L. PIKE AND JACQUELINE CALLAHAN.* *Pennsylvania State Univ.*

3:15 **509.** Magnesium deficiency in the laying hen. HARDY M. EDWARDS, JR. AND DENIS NUGARA.* *Univ. of Georgia.*

3:30 **510.** Effect of high levels of dietary iodine on reproduction and lactation in rats. L. R. ARRINGTON, C. B. AMMERMAN, J. L. EDWARDS, A. C. WARNICK* AND G. K DAVIS. *Univ. of Florida.*

3:45 **511.** Iron absorption, excretion and utilization by calves. SAM L. HANSARD AND LON E. FOOTE.* *Louisiana Agric. Exper. Sta.*

Nutrition Society Business Meeting

MONDAY, 4:30 P.M.—AMBASSADOR "22" CLUB

Federation Office: Room 8, Convention Hall

Placement Service
Main Arena Floor, Convention Hall

Nutrition Society Coffee Lounge
Monday through Friday, 8:30 A.M.–5:00 P.M., Ambassador, Sun Porch

Immunology Society Sessions—Monday, 9:00 a.m.

51. Viruses I. Rickettsiae

MON. A.M.—SHELBURNE, GRANDE BALLROOM

Chairman: J. Y. Sugg

9:00 **512.** Antibody inactivation of detergent-treated tobacco mosaic virus. IRVING RAPPAPORT. *UCLA.*

9:15 **513.** Effect of fluorocarbon treatment on the infectivity of several viruses and rickettsiae. RALPH F. WACHTER* AND JOANN F. COMER.* *Fort Detrick, Maryland.*

9:30 **514.** Seasonal variation in yields of typhus rickettsiae from eggs of different flocks. H. B. REES, JR.* AND JAMES W. JOHNSON.* *Fort Detrick, Maryland.*

9:45 **515.** Trachoma viruses isolated in United States: Infectivity and immunogenicity for monkeys. E. JAWETZ, C. DAWSON,* P. THYGESON* AND L. HANNA.* *Univ. of California.*

10:00 **516.** Serological evidence of differing epidemiological patterns of measles. FRANCIS L. BLACK. *Yale Univ.*

10:15 **517.** Evaluation of serologic tests for the detection of measles virus antibodies. H. M. MEYER, JR.,* B. E. BROOKS* AND R. D. DOUGLAS.* *Natl. Insts. of Health.*

10:30 **518.** An immuno-cytochemical study of vaccinia virus infected HeLa cells. PHILIP C. LOH* AND JOHN L. RIGGS.* *Univ. of Michigan.*

10:45 **519.** Electron microscopic localization of viral antigen by means of ferritin-conjugated antibody. C. MORGAN, R. A. RIFKIND,* K. C. HSU,* M. HOLDEN,* A. W. KNOX AND H. M. ROSE. *Columbia Univ.*

11:00 **520.** Effect of rabbit testicular extract (TE) on vaccinia infection in baby mice and in cortisone-treated adult mice. M. L. DURAN-REYNALS.* *Rutgers Univ.*

11:15 **521.** Immunofluorescent and histochemical studies of equine abortion virus hepatitis in hamsters. M. D. HOGGAN,* J. F. METZGER* AND C. W. SMITH.* *Armed Forces Inst. of Pathol.*

11:30 **522.** Antibody in hepatitis patients against a newly isolated virus. J. P. O'MALLEY* AND H. M. MEYER, JR.* *Natl. Insts. of Health.*

52. Complement

MON. A. M.—SHELBURNE, KERRY HALL

Chairman: M. Landy

9:00 **523.** Detection and alteration of C'3 component in mouse plasma. COURTNEY T. WEMYSS, JR.* AND CURTIS A. WILLIAMS, JR. *Hofstra Coll. and Rockefeller Inst.*

9:15 **524.** Immune hemolysis at 0°: the C'3 step and terminal step. DAVID L. MCVICKAR.* *Univ. of California.*

9:30 **525.** Isolation of three components of the C'3 complex. A. B. TAYLOR* AND M. A. LEON. *St. Luke's Hosp., Cleveland.*

9:45 **526.** Carboxypeptidase A and complement. KENNETH AMIRAIAN* AND EDWARD J. LEIKHIM.* *New York State Health Dept.*

10:00 **527.** Comparison of complement fixing potency of antiserum from various species. J. F. BARBARO* AND E. L. BECKER. *Walter Reed Army Inst.*

10:15 **528.** Reaction of human serum inhibitor of C' 1-esterase with intermediates in the immune hemolytic system. M. A. LEON AND I. H. LEPOW. *St. Luke's Hosp. and Western Reserve Univ.*

10:30 **529.** Non-immune hemolysis of erythrocytes altered by bacterial lipopolysaccharides. ROBERT C. SKARNES.* *Univ. of Minnesota and Inst. Pasteur.*

10:45 **530.** A nonspecific inactivation of C' by lipopolysaccharides of Mycobacterium tuberculosis. J. F. KENT, R. W. STEVENS,* W. B. LAWSON* AND H. W. REILLY.* *New York State Dept. of Health, Albany.*

11:00 **531.** Assay of normal antibody and C' by coliphage neutralization. A. J. TOUSSAINT* AND L. H. MUSCHEL. *Walter Reed Army Inst.*

Immunology Society Sessions—Monday, 1:30 p.m.

53. Transplantation

MON. P.M.—SHELBURNE, KERRY HALL

Chairman: E. Witebsky

1:30 **532.** Variations in individual specificity in human homograft reactions. F. T. RAPAPORT,* L. THOMAS, J. M. CONVERSE* AND H. S. LAWRENCE. *New York Univ.*

1:45 **533.** Identification of homograft failure with fluorescein. KENNETH R. WILLIAMSON,* RONALD D. GUTTMAN,* ROBERT K. AUSMAN* AND J. BRADLEY AUST.* *Univ. of Minnesota.* (Physiol.)

2:00 **534.** Specific homograft tolerance in long-lived homologous bone marrow radiation chimeras. LEONARD J. COLE AND WILLIAM E. DAVIS, JR. *U. S. Naval Radiol. Defense Lab., San Francisco.* (Physiol.)

2:15 **535.** Homograft-rejection capacity of isolated spleen cells. FRANCO CELADA* AND RACHEL R. CARTER.* *Oak Ridge Natl. Lab.* (Physiol.)

2:30 **536.** Origin of antibody-forming cells in homologous chimeras. G. DORIA,* J. W. GOODMAN,* N. GENGOZIAN AND C. C. CONGDON.* *Oak Ridge Natl. Lab.*

2:45 **537.** Transmission of homograft tolerance to progeny of actively immunized mice. FLORENCE LAZERE,* EDITH RATNER* AND JUDITH GRUEN.* *Waldemar Research Fndn.*

3:00 **538.** Modification of the homograft response in young chicks with 19-nor-testosterone. B. W. PAPERMASTER,* D. I. FRIEDMAN* AND R. A. GOOD. *Univ. of Minnesota.*

3:15 **539.** Tolerance of skin homograft in adult mice induced by homologous spleen cells. FRED SHAPIRO,* CARLOS MARTINEZ* AND JUNE M. SMITH.* *Univ. of Minnesota.* (Physiol.)

3:30 **540.** Isolation of soluble homotransplantation antigens. L. A. MANSON,* G. V. FOSCHI* AND J. F. DUPLAN.* *Wistar Inst.*

3:45 **541.** Transplantation of blood leukocytes. J. W. GOODMAN. *Oak Ridge Natl. Lab.* (Physiol.)

4:00 **542.** Immunological studies with thyroglobulin in normal rats and in rats bearing experimental thyroid tumors. GORDON C. SHARP,* FALCONER SMITH AND RICHARD L. SWARM.* *Natl. Cancer Inst.* (Physiol.)

4:15 **543.** Detection of the tumoral antigen in Walker tumor bearing rats by a local anaphylactic reaction. DIDIER DUFOUR.* *Laval Univ., Quebec.* (Physiol.)

4:30 **544.** Relation of antibody to growth of Walker carcinoma. DANIEL A. BOROFF. *New England Inst.*

54. Microorganisms

MON. P.M.—SHELBURNE, CORAL REEF ROOM

Chairman: S. P. Halbert

1:30 **545.** Electrophoretic separation of intracellular and cell wall O antigens of V. cholerae. WILLIAM BURROWS. *Univ. of Chicago.*

1:45 **546.** Fractionation of water soluble antigens of S. typhosa. EDGAR E. BAKER AND ROBERTA E. WHITESIDE.* *Boston Univ.*

2:00 **547.** Bactericidal reactions of anti-O and anti-Vi against Salmonella typhosa. E. OSAWA.* *Walter Reed Army Inst.*

2:15 **548.** Production of specific antigens in phage-infected bacteria. GERHARD F. FUEGER,* SIGMUND R. SUSKIND AND CHARLES A. THOMAS.* *Johns Hopkins Univ.*

2:30 **549.** Isolation of membranes from mechanically disrupted hemolytic streptococci. EARL H. FREIMER* AND RICHARD M. KRAUSE. *Rockefeller Inst.*

2:45 **550.** Disruption of mycobacteria and their stainability by fluorescent antibody. CHARLES C. SHEPARD AND DAVID KIRSH.* *Communicable Disease Ctr.*

3:00 **551.** Serologic relationships among mycobacteria. DAVID KIRSH* AND CHARLES C. SHEPARD. *Communicable Disease Ctr.*

3:15 **552.** Purification and characterization of staphylococcus alpha-hemolysin. KEIICHI GOSHI,* LEIGHTON E. CLUFF AND PHILIP S. MORMAN.* *Johns Hopkins Univ.*

3:30 **553.** A cytopathogenic effect of staphylococcal filtrates on human cells in tissue culture: neutralization with immune sera. IRVING GOLDSCHNEIDER,* LEONARD HAYFLICK,* STUART MUDD AND JAMES TAUBLER.* *Univ. of Pennsylvania, Wistar Inst. and VA Hosp.*

3:45 **554.** DNA-containing antigens of Brucella. N. C. PALCZUK,* O. J. PLESCIA AND W. BRAUN.* *Rutgers Univ.*

4:00 **555.** Isolation and identification of the antigenic components Erysipelothrix rhusiopathiae. THOMAS G. WHITE AND GEORGE F. KALF.* *Natl. Animal Dis. Lab. and Seton Hall Coll. of Med.* (Biochem.)

Motion Pictures

Motion pictures will be run continuously for three days, Tuesday through Thursday, 9:00 A.M.–5:00 P.M., Room D, Main Arena Floor, Convention Hall.

Press Room: Room 9, Convention Hall

Immunology Society Coffee Lounge

Monday through Friday, 8:30 A.M.–5:00 P.M., Shelburne, Solarium

Forty-fifth annual meeting—cont.

Chamber Music

The Federation Amateur Chamber Music Players, perhaps better known as La Federazione Musicale, will meet at 5:00 P.M. and again in the evening, from Sunday, April 9, through Thursday, April 13, in the Venetian Room of the Ambassador Hotel. All chamber music players are welcome, and the public is invited to an evening of free entertainment. Dr. Waldo E. Cohn is in charge of arrangements.

Women's Hospitality Lounge

A Women's Hospitality Lounge, located in the ocean-view Founders Room of the Dennis Hotel, will be open Monday through Friday, 9:00 A.M. to 5:00 P.M., as a meeting place and social center for all those wearing the Federation women's badge. Free coffee service, card tables and cards will be provided. Information about entertainment facilities in Atlantic City, Philadelphia, and New York, as well as bus and railroad schedules, will be posted on a bulletin board in the Lounge.

Women's registration will be located in the Lounge on Monday and Tuesday, April 10 and 11, and thereafter in the main registration area, Lobby, Convention Hall. Women's registration fee is $1.00.

Message Center: Information Desk

A message and information center will be located in the registration area, Lobby, Convention Hall, for distribution of mail and exchange of personal messages. The visible index of registrants will also be in this area. These facilities will be open Sunday, 12:00 noon to 11:00 P.M., and Monday through Friday, 8:00 A.M. to 5:00 P.M.

Lost and Found

Articles left in session rooms will be brought to the Federation Office, Room 8, Convention Hall, where owners may call for them.

Shuttle Bus Transportation, Philadelphia–Atlantic City

To facilitate travel to and from Atlantic City, special chartered buses will shuttle between the entrance to the Philadelphia Airport and the entrance to the Public Service Bus Terminal in Atlantic City, with a one-way fare of $1.54 per person. Bus schedules may be obtained by writing to the Federation Office, 9650 Wisconsin Avenue, Washington 14, D. C.

Return tickets from Atlantic City to Philadelphia will be on sale at a Public Service Company ticket desk in the registration area, Lobby, Convention Hall. Return tickets should be purchased at the time of registering for the Annual Meeting. If advance ticket sales indicate that buses are needed in addition to those scheduled, the bus service from Atlantic City to Philadelphia will be increased.

Tuesday, April 11

Federation Joint Session

TUESDAY, APRIL 11, 7:45 P.M.—CONVENTION HALL, BALLROOM

APPROACHES TO STUDY OF DISEASE

Chairman: Cyrus C. Erickson, *University of Tennessee, Memphis*

New approaches in the study of cardiovascular disease. WALTER STANLEY HARTROFT, *Washington University School of Medicine, St. Louis, Missouri.*

Histochemistry and electron microscopy in the study of renal disease. J. F. A. MCMANUS, *University Museum, Oxford, England* (*University of Alabama Medical School, Birmingham*)

Quantitative cytochemistry for study of normal and abnormal growth. TORBJÖRN CASPERSSON, *Institute of Cell Research, Karolinska Institute, Stockholm, Sweden.*

Vistas in etiology and pathogenesis of neoplasia. JACOB FURTH, *Roswell Park Memorial Institute, Buffalo, New York.*

55. MOTION PICTURE SESSION

TUESDAY, 9:00 A.M. to 5:00 P.M.—CONVENTION HALL, ROOM D

Neuron-glia interactions in long-term cultures of adult brain cortex. R. S. GEIGER AND W. G. STONE. *Univ. of Illinois.* (Physiol.) (15 min.)

Stereotaxic implantation of chronic electrodes. MICHAEL BLUMENFIELD AND JAMES WATTS. *Univ. of Rochester.* (Physiol.) (25 min.)

Behavior of chronic decerebellate cats with or without neocortex. G. H. WANG AND W. I. WELKER. *Univ. of Wisconsin.* (Physiol.) (10 min.)

Carotid and vertebral arterial to blood supply of cerebral cortex of sheep and calves. B. A. BALDWIN AND F. R. BELL. *Royal Veterinary Coll., Univ. of London.* (Physiol.) (10 min.)

Function of platelets in peripheral circulation. HERBERT J. BERMAN* AND GEORGE P. FULTON. *Boston Univ.* (Physiol.) (20 min.)

Permanent cannulation of aorta and vena cava in rats and ground squirrels. V. POPOVIC. *Univ. of Houston.* (Physiol.) (25 min.)

Cardiovascular and respiratory reflexes in ether anesthesia. G. A. KIEN*, A. GOMOLL* AND CEDRIC M. SMITH. *Univ. of Illinois Coll. of Med.* (Pharmacol.) (20 min.)

Maintenance of airway patency by hyperextension of the head as studied cinefluorographically. DAVID G. GREENE AND JAMES O. ELAM. *Univ. of Buffalo Med. Sch. and Roswell Park Mem. Inst* (Physiol.) (10 min.)

Hypothermia and hypoxia-hypercapnia in experimental asphyxia of puppies. JAMES A. MILLER, JR. AND FAITH S. MILLER, *Tulane Univ.* (Physiol.) (25 min.)

Inductographic technic for recording motor activity of contractile organs, especially the pyloric sphincter region. J. P. QUIGLEY, D. A. BRODY, H. S. LOUCKES AND J. W. KERSEY. *Univ. of Tennessee.* (Physiol.) (20 min.)

Phase microscopic observations of mitochondria and chloroplasts in living spinach mesophyll cells. S. HONDA, T. HONGLADAROM AND S. WILDMAN, *UCLA.* (Biochem.) (15 min.)

Secretory activity of tissue mast cells, effects of drugs on mast cells. YEVETTE S. LEWIS*, DOUGLAS E. SMITH AND GEORGE SVIHLA*. *Argonne Natl. Lab., Argonne, Ill.* (Physiol.) (15 min.)

People to people—Ethiopia. JACK ROBINSON. *NIAMD, Natl. Insts. of Health.* (Nutr.) (25 min.)

Nutrition survey, Republic of Vietnam, 1959. RICHARD FOLLIS AND WARREN CRISS. *U. S. Army Med. Res. Lab.* (Nutr.) (40 min.)

Motion pictures will be run continuously 9:00 A.M. to 5:00 P.M. Tuesday, Wednesday, and Thursday.

Intersociety Sessions—Tuesday, 9:00 a.m.

56. SYMPOSIUM: Viruses and Neoplasia

TUES. A.M.—RITZ-CARLTON, RITZ HALL

Chairmen: J. T. Syverton; J. W. Beard

9:00 **556.** Introductory remarks JEROME T. SYVERTON. *Univ. of Minnesota.*

9:15 **557.** Possible mechanisms of virus carcinogenesis. HENRY S. KAPLAN. *Stanford Univ.*

9:40 **558.** Cellular response to tumor viruses. CLYDE J. DAWE. *Natl. Cancer Inst.*

10:05 **559.** An analysis of the preneoplastic mammary tissue of C_3H mice infected with the mammary tumor virus. KENNETH B. DEOME. *Univ. of California.*

10:30 **560.** Avian leukemias. JOSEPH W. BEARD. *Duke Univ.*

10:55 **561.** Murine leukemias. JOHN B. MOLONEY. *Natl. Cancer Inst.*

11:20 **562.** Experimental studies of human tumors. JAMES T. GRACE, JR. *Roswell Park Mem. Inst.*

57. SYMPOSIUM: The Hemicholiniums

TUES. A.M.—DENNIS, ST. DENIS ROOM

Chairman: F. W. Schueler

9:00 **563.** Introduction. F. W. SCHUELER. *Tulane Univ.*

9:10 **564.** Effect of HC-3 on acetylcholine turnover. F. C. MACINTOSH. *McGill Univ.*

9:30 5-Minute question period.

9:35 **565.** Post synaptic action of HC-3 on neuromuscular transmission. V. B. BROOKS AND R. THIES. *Rockefeller Inst.*

9:55 **566.** Post synaptic action of HC-3 on neuromuscular transmission. A. R. MARTIN AND R. K. ORKAND. *Univ. of Utah.*

10:15 15-Minute question period.

10:30 Intermission.

10:40 **567.** Peripheral action of HC-3 and structure activity relationships. J. P. LONG. *State Univ. of Iowa.*

11:00 **568.** Pharmacologic studies on 3,6-bis(3-diethylaminopropoxy) pyridoxine-bis-methiodide, a hemicholinium-like agent. R. M. GESLER. *Baxter Labs.*

11:20 5-Minute question period.

11:25 **569.** Respiratory depressant effect of HC-3. H. L. BORISON. *Univ. of Utah.*

11:55 Summary and final question period.

58. Atherosclerosis I: Experimental Production

TUES. A.M.—CONVENTION HALL, ROOM B

Chairmen: W. S. Hartroft; R. E. Shank

9:00 **570.** Experimental production of thrombo-atherosclerosis. SANFORD O. BYERS AND MEYER FRIEDMAN. *Mount Zion Hosp. and Med. Ctr.* (Physiol.)

9:15 **571.** Production of thrombosis in atherosclerotic arteries. P. CONSTANTINIDES AND R. N. CHAKRAVARTI.* *Univ. of British Columbia.* (Physiol.)

9:30 **572.** Progression of atherosclerosis in rhesus monkeys. C. B. TAYLOR, LAVERNE COX,* JANE SOUTHWORTH* AND G. E. COX.* *Evanston Hosp. and Northwestern Univ. Med. Sch.* (Pathol.)

9:45 **573.** Comparison of the cardiopathies of choline deficiency and potassium deficiency in the rat. PAUL M. NEWBERNE* AND W. D. SALMON. *Auburn Univ.* (Nutr.)

10:00 **574.** Retrogressive changes of experimental arteriosclerosis in rabbits. I. Artery sampling and pregnancy. T. C. HUANG* AND A. RAFTERY.* *Timken-Mercy Hosps.* (Nutr.)

10:15 **575.** Effects of dietary fats, protein and cholesterol on coronary atherosclerosis in pigeons. THOMAS B. CLARKSON* AND ROBERT W. PRICHARD.* *Bowman Gray Sch. of Med.* (Pathol.)

10:30 **576.** Interactions among dietary fat, protein and cholesterol in atherosclerosis-susceptible pigeons. HUGH B. LOFLAND* AND HAROLD O. GOODMAN.* *Bowman Gray Sch. of Med.* (Biochem.)

10:45 **577.** Tissue cultures of aortae of normal and of cholesterol-fed rabbits. TATSUO KOKUBU* AND O. J. POLLAK. *Dover Med. Res. Ctr.* (Pathol.)

11:00 **578.** Free amino acids in media from in vitro cultures of normal and atherosclerotic rabbits' aortae. ARACELI M. ENGEL* AND O. J. POLLAK. *Dover Med. Res. Ctr.* (Pathol.)

11:15 **579.** Origin of cholesterol and cholesterol ester of rabbit atheroma. H. A. I. NEWMAN* AND D. B. ZILVERSMIT. *Univ. of Tennessee.* (Physiol.)

11:30 **580.** Oxidative denaturation of serum low density lipoproteins. TOSHIRO NISHIDA* AND FRED A. KUMMEROW. *Univ. of Illinois.* (Nutr.)

11:45 **581.** Entrance of albumin into aortic wall. LEROY E. DUNCAN, JR., KATHERIN BUCK AND ALMORRIS LYNCH. *Natl. Insts. of Health.* (Physiol.)

12:00 **582.** Thromboplastin activities of human arterial and venous tissue. JOHN ESBEN KIRK. *Washington Univ. Sch. of Med.* (Biochem.)

59. Neuorpharmacology IV

TUES. A.M.—CONVENTION HALL, ROOM A

Chairman: F. M. Berger

9:00 **583.** Potent blocking effect of a pyrrolopyrimidine (B.W. 58-271) on the spinal polysynaptic reflexes. KENNETH COOPER,* A. L. WNUCK* AND STATA NORTON. *Wellcome Res. Labs.* (Pharmacol.)

9:15 **584.** Unique effects of a pyrrolopyrimidine (B.W. 58-271) on the electrical activity of the brain. STATA NORTON. *Wellcome Res. Labs.* (Pharmacol.)

9:30 **585.** Pharmacological studies of a new centrally acting skeletal muscle relaxant, N-cyclopropyl-3,5-dichloro-4-amino benzamide (MR1230). T. E. LYNES* AND G. M. EVERETT. *Abbott Labs.* (Pharmacol.)

9:45 **586.** Central depressant and interneuronal blocking properties of a new 2-substituted pyrimidine compound. THOMAS B. O'DELL, MARTHA D. NAPOLI* AND JOSEPH H. MIRSKY. *Irwin, Neisler & Co.* (Pharmacol.)

10:00 **587.** Sodium gamma-hydroxybutyrate on the central nervous system. ANNA B. DRAKONTIDES,* WILLIAM H. FUNDERBURK AND JURG A. SCHNEIDER. *Chas. Pfizer.* (Pharmacol.)

10:15 **588.** Central effect of hexahydro-2′-methylspiro [cyclohexane-1, 8′(6H)-oxazino[3,4-a]pyrazine]. G. CHEN AND F. P. HAUCK.* *Parke, Davis.* (Pharmacol.)

10:30 **589.** CNS stimulants and electrical brain activity in spontaneously behaving cats. BARBARA B. BROWN. *Riker Labs.* (Pharmacol.)

10:45 **590.** Competitive inhibition of convulsions due to the diethylamino ethanol ester of diphenylacetic acid (adephe-

nine) by its quaternary ethiodide. R. K. RICHARDS AND K. E. KUETER.* *Abbott Labs.* (Pharmacol.)

11:00 **591.** Anticonvulsant effect of nialamide and diphenylhydantoin. S. Y. P'AN, W. H. FUNDERBURK AND K. F. FINGER.* *Chas. Pfizer.* (Pharmacol.)

11:15 **592.** Diphenylhydantoin-2-C^{14} in cat brain. H. FIREMARK,* C. F. BARLOW* AND L. J. ROTH. *Univ. of Chicago.* (Pharmacol.)

60. Anterior Pituitary I

TUES. A.M.—CONVENTION HALL, ROOM 20

Chairman: Jane Russell

9:00 **593. INTRODUCTORY REMARKS.** Growth hormone and related pituitary factors in the metabolism of carbohydrate, fat and protein. J. A. RUSSELL. *Emory Univ.* (Physiol.)

9:30 **594.** Electrophoresis of pituitary hormones in starch gel. R. J. BARRETT,* H. FRIESEN* AND E. B. ASTWOOD. *New England Ctr. Hosp. and Tufts Univ.* (Physiol.)

9:45 **595.** Specificity of in vitro STH effect on amino acid transport. J. L. KOSTYO* AND J. E. SCHMIDT*. *Duke Univ.* (Physiol.)

10:00 **596.** Effect of growth hormone supplementation on life span of the female rat. J. D. EMERSON AND G. M. EMERSON.* *Univ. of Alabama.* (Physiol.)

10:15 **597.** Growth hormone effects in hypothyroid rats. E. SCHONBAUM* AND E. A. SELLERS. *Univ. of Toronto.* (Pharmacol.)

10:30 **598.** Lack of anticatabolic effect of anabolic steroids in fasting rats. J. L. IZZO* AND S. R. GLASSER.* *Univ. of Rochester.* (Nutr.)

10:45 **599.** Influence of cortisone on effects of growth hormone on carbohydrate metabolism. N. ALTSZULER, A. DUNN, R. STEELE,* J. S. BISHOP* AND R. C. DE BODO. *New York Univ. and Brookhaven Natl. Lab.* (Physiol.)

11:00 **600.** Stimulatory action of luteinizing hormone on glucose uptake by corpus luteum tissue. D. T. ARMSTRONG.* *Harvard Sch. of Dent. Med.* (Physiol.)

11:15 **601.** Role of pituitary in lipolytic action of epinephrine. H. M. GOODMAN AND E. KNOBIL. *Harvard Med. Sch.* (Physiol.)

61. Blood Clotting II

TUES. A.M.—SHELBURNE, CORAL REEF ROOM

Chairmen: S. A. Johnson; J. G. Pool

9:00 **602.** Blood coagulation and prothrombin times in chickens. PAUL GRIMINGER AND HANS FISHER. *Rutgers Univ.* (Nutr.)

9:15 **603.** Prothrombin rebound—a response to Dicumarol. KENT D. MILLER AND WILLIAM L. BAYER*. *New York State Dept. of Health and Albany Med. Coll.* (Biochem.)

9:30 **604.** Problem of reactor and nonreactor rabbits with Dicumarol. G. J. MILLAR* AND L. B. JAQUES. *Univ. of Saskatchewan.* (Physiol.)

9:45 **605.** Spontaneous hemorrhagic diathesis in inbred mice due to "prothrombin-complex" deficiencies. HANS MEIER, WARREN G. HOAG* AND ROBERT C. ALLEN*. *Roscoe B. Jackson Mem. Lab.* (Pathol.)

10:00 **606.** Effects of feeding a vitamin K deficient ration to rats, cats and dogs. ELWOOD F. REBER AND OM P. MALHOTRA.* *Univ. of Illinois.* (Nutr.)

10:15 **607.** Effects of methionine on blood coagulation in rats fed a vitamin K deficient ration. OM P. MALHOTRA* AND ELWOOD F. REBER. *Univ. of Illinois.* (Nutr.)

10:30 **608.** 2-Chloro-3-phytyl-1:4-naphthoquinone, an antivitamin of vitamin K_1 (2-methyl-3-phytyl-1:4-naphthoquinone). J. LOWENTHAL* AND J. A. MAC FARLANE*. *Univ. of Manitoba Faculty of Med.* (Physiol.)

10:45 **609.** A cellular study of prothrombin synthesis altered by coumarin and vitamin K_1. MARION I. BARNHART AND GORDON F. ANDERSON.* *Wayne State Univ. Coll. of Med.* (Physiol.)

11:00 **610.** Antagonistic effects of warfarin and vitamin K on factor VII synthesis by rat liver slices. JUDITH G. POOL, GEROLD GRODSKY* AND MARY B. BROWN.* *Stanford Univ. Sch. of Med.* (Physiol.)

11:15 **611.** In vitro test to measure heparin resistance in the blood of the arteriosclerotic patient. SHIRLEY A. JOHNSON. *Henry Ford Hosp. and Marquette Univ. Coll. of Med.* (Physiol.)

11:30 **612.** Purification of the Hageman factor. PAUL DIDISHEIM. *Univ. of Utah Coll. of Med.* (Nutr.)

Intersociety Sessions—Tuesday, 1:30 p.m.

62. Atherosclerosis II: Human—Geopathology

TUES. P.M.—CONVENTION HALL, ROOM B

Chairmen: R. E. Olson; Ira Gore

1:30 **613.** Chemico-pathologic studies in geographic pathology: a quantitative indicator of coronary arteriosclerosis. A. DAOUD, F. GOODALE* AND R. FLORENTIN. *Albany Med. Coll.* (Pathol.)

1:45 **614.** Chemico-pathologic studies in geographic pathology: a quantitative comparison of amount of coronary arteriosclerosis in East Africans versus New Yorkers. R. FLORENTIN, A. DAOUD, R. F. SCOTT* AND K. T. LEE. *Albany Med. Coll.* (Pathol.)

2:00 **615.** Size, growth, and health of Congo pygmies. GEORGE V. MANN, OSWALD A. ROELS* AND JOSEPH M. MERRILL. *Vanderbilt Univ. and Columbia Univ.* (Nutr.)

2:15 **616.** Cardiovascular disease in African pygmies. JOSEPH M. MERRILL, GEORGE V. MANN, OSWALD A. ROELS* AND DONALD PRICE.* *VA Hosp. and Vanderbilt Univ.* (Physiol.)

2:30 **617.** Chemico-pathologic studies in geographic pathology: serum lipids compared in three groups of young Koreans. K. T. LEE, K. S. KIM AND D. L. KIM. *Kyungpook Univ. and Albany Med. Coll.* (Pathol.)

2:45 **618.** Chemico-pathologic studies in geographic pathology: lack of correlation of fatty acid patterns in adipose tissue with amount of coronary arteriosclerosis in 57 autopsied New Yorkers. W. A. THOMAS,* R. SCOTT* AND A. DAOUD. *Albany Med. Coll.* (Pathol.)

3:00 **619.** Factors implicated in cardiovascular disease in Irish-born males in Ireland and Boston. MARY B. MCCANN,*

ROBERT E. CLANCY,* MARTHA F. TRULSON AND FREDRICK J. STARE. *Harvard Univ.* (Nutr.)

3:15 **620.** Review of biological data on the Canadian Eskimo. L. B. PETT, P. VERDIER* AND J. E. MONAGLE.* *Dept. of Natl. Health and Welfare, Canada.* (Nutr.)

3:30 **621.** Dietary changes in middle-aged coronary-prone men participating in a coronary prevention evaluation program. J. STAMLER, Y. HALL,* V. JAUCH,* D. M. BERKSON,* Q. D. YOUNG,* A. FUSCONE,* C. SAXTON,* M. STIEFEL,* C. TREDWELL* AND E. UPJOHN. *Chicago Bd. of Health and Northwestern Univ.* (Nutr.)

3:45 **622.** Why heart attacks decreased in Europe during the war: fat vs. protein. BRODA O. BARNES AND MAX RATZENHOFER.* *Denver, Colorado, and Univ. of Graz, Austria.* (Physiol.)

63. Neuropharmacology V

TUES. P.M.—CONVENTION HALL, ROOM A

Chairman: C. A. Winter

1:30 **623.** Effect of drugs on maintenance of exploratory behavior in mice. E. N. GREENBLATT* AND A. C. OSTERBERG.* *Lederle Labs. Div.* (Pharmacol.)

1:45 **624.** Behavioral and pharmacological differences among certain strains of mice. PRISCILLA BOURGAULT* AND ALEXANDER G. KARCZMAR. *Loyola Univ.* (Pharmacol.)

2:00 **625.** Retrograde amnesia produced by spreading cortical depression. CHESTER PEARLMAN* AND MURRAY E. JARVIK. *Albert Einstein Coll. of Med.* (Pharmacol.)

2:15 **626.** Effect of depressant drugs on thresholds for aversive brain stimulation. V. G. VERNIER, J. J. BOREN,* P. G. KNAPP* AND J. L. MALIS.* *Merck Inst. for Therap. Res.* (Pharmacol.)

2:30 **627.** Electrical self-stimulation by dogs through chronically implanted electrodes in the hypothalamus. PAUL STARK* AND EUGENE S. BOYD. *Univ. of Rochester.* (Pharmacol.)

2:45 **628.** Tremorine tremor in chronic spinal rats. R. K. CHALMERS* AND G. K. W. YIM.* *Purdue Univ.* (Pharmacol.)

3:00 **629.** Electroencephalographic and clinical study of the totally hemispherectomized monkey during normal and induced convulsive activity. ROBERT J. WHITE,* COLLIN S. MACCARTY* AND REGINALD G. BICKFORD. *Mayo Clinic and Mayo Fndn.* (Physiol.)

3:15 **630.** Effect of various anticholinergics on the spontaneous activity of mice. L. S. HARRIS.* *Sterling-Winthrop Res. Inst.* (Pharmacol.)

3:30 **631.** Tranquilizer suppression of pseudoprotective behavior in rat. OAKLEY S. RAY* AND AMEDEO S. MARRAZZI. *VA Res. Lab. in Neuropsychiatry.* (Pharmacol.)

3:45 **632.** Pseudo-extinction of conditioned antidiuretic responses. S. A. CORSON, E. O'L. CORSON,* R. A. DYKMAN,* J. E. PETERS,* W. G. REESE* AND L. D. SEAGER.* *Columbus Psychiatric Inst. and Univ. of Arkansas.* (Physiol.)

64. Anterior Pituitary II

TUES. P.M.—CONVENTION HALL, ROOM 20

Chairman: S. A. D'Angelo

1:30 **633.** ACTH in pituitary grafts. S. YOSHIDA AND G. SAYERS. *Western Reserve Univ.* (Physiol.)

1:45 **634.** Influence of heparin, nicotinic acid and ACTH on experimental nephrosis. K. G. WAKIM, B. F. MCKENZIE, W. F. MCGUCKIN, A. L. BROWN, JR. AND A. H. BAGGENSTOSS.* *Mayo Clinic and Mayo Fndn.* (Physiol.)

2:00 **635.** Hormone production by mammotropic tumors in rats. R. E. GRINDELAND,* E. HARRISON* AND F. E. WHERRY.* *Saskatchewan Univ. and Natl. Insts. of Health.* (Physiol.)

2:15 **636.** Isolation of an α-MSH-like peptide from hog pituitaries. A. V. SCHALLY,* W. NELKIN,* H. S. LIPSCOMB,* J. M. LONG* AND R. GUILLEMIN. *Baylor Univ.* (Physiol.)

2:30 **637.** Extraction and purification of follicle-stimulating hormone from ovine pituitary tissue. C. L. CAHILL,* R. W. PAYNE AND M. R. SHETLAR.* *Univ. of Oklahoma.* (Pharmacol.)

2:45 **638.** Influence of uterus on pituitary-ovarian relationship. M. SILBIGER* AND I. ROTHCHILD. *Western Reserve Univ.* (Physiol.)

3:00 **639.** Enzymic changes in pituitary during induction of tumors by diethylstilbestrol. J. B. MELCHIOR AND B. M. BALTRUS.* *Chicago Coll. of Osteopathy and Stritch Sch. of Med.* (Biochem.)

3:15 **640.** Effect of chloramiphene on fertility and ovulation. D. E. HOLTKAMP, R. H. DAVIS* AND J. E. RHOADS.* *Wm. S. Merrell Co.* (Pharmacol.)

3:30 **641.** Endocrine and other biological effects of chloramiphene. E. F. VAN MAANEN, J. G. GRESLIN,* D. E. HOLTKAMP AND W. M. KING.* *Wm. S. Merrell Co.* (Pharmacol.)

3:45 **642.** Anterior pituitary regulation of ovarian ascorbic acid and cholesterol concentration in pseudopregnant rats. A. F. PARLOW.* *Massachusetts Gen. Hosp. and Harvard Med. Sch.* (Physiol.)

4:00 **643.** Inactivation of prolactin by blood serum and plasmin. T. F. HOPKINS* AND J. MEITES. *Michigan State Univ.* (Physiol.)

65. Gastroenterology II

TUES. P.M.—RITZ-CARLTON, RITZ HALL

Chairmen: A. J. Cox; C. B. Taylor

1:30 **644.** Carcinoma of the glandular stomach induced in rats by the dietary administration of N,N^1-2,7-fluorenylenebisacetamide. HAROLD L. STEWART, KATHARINE C. SNELL,* HAROLD P. MORRIS, BILLIE P. WAGNER* AND FRANCIS E. RAY.* *Natl. Cancer Inst. and Univ. of Florida.* (Pathol.)

1:45 **645.** Topographic study of noncancerous stomachs. SHELDON C. SOMMERS AND WILLIAM E. MONTEITH.* *Massachusetts Mem. Hosp.* (Pathol.)

2:00 **646.** Cell population kinetics in the colon. MARTIN LIPKIN AND HENRY QUASTLER.* *Cornell Univ. Med. Coll.* (Physiol.)

2:15 **647.** Regeneration of colon epithelium: a morphologic histochemical study. WILLIAM A. FOLEY* AND LEE W. WATTENBERG. *Univ. of Minnesota Med. Sch.* (Pathol.)

2:30 **648.** Antigenic specificity of colon mucosa. J. B. KIRSNER* AND ELAZAR BREGMAN.* *Univ. of Chicago.* (Pathol.)

2:45 **649.** Some properties of colon antibodies in ulcerative colitis. ELAZAR BREGMAN* AND JOSEPH B. KIRSNER.* *Univ. of Chicago.* (Pathol.)

3:00 **650.** On etiology of gallstones. D. M. NICOLOFF,* W. O. GRIFFEN, JR.*, S. L. WANGENSTEEN,* K. IMAMOGLU* AND O. H. WANGENSTEEN. *Univ. of Minnesota.* (Pathol.)

3:15 **651.** Effect of bile acid sequestrant on serum lipids, bile acids and pruritus in biliary cirrhosis. SAMI A. HASHIM* AND THEODORE B. VAN ITALLIE. *St. Luke's Hosp. and Columbia Univ.* (Nutr.)

3:30 **652.** Serum γ-glutamyl transpeptidase activity in hepatobiliary-pancreatic disease. E. P. PINEDA,* J. A. GOLDBARG* AND A. M. RUTENBURG.* *Beth Israel Hosp. and Harvard Med. Sch.* (Pathol.)

66. Cytology II

TUES. P.M.—SHELBURNE, CORAL REEF ROOM

Chairmen: C. E. Dunlap; T. D. Norman

1:30 **653.** Cation fluxes in butanol treated erythrocytes. J. W. GREEN* AND GUY BOND.* *Rutgers Univ.* (Physiol.)

1:45 **654.** Ehrlich ascites cell nuclei. V. Quantitation of

DPN pyrophosphorylating activity in isolated nuclei. EDWARD D. HUDACK* AND DONALD E. EROS.* *VA Hosp. and Western Reserve Univ.* (Physiol.)

2:00 **655.** Surface titration curves of mouse ascites tumor cells. HUBERT R. CATCHPOLE, MILTON B. ENGEL* AND NORMAN R. JOSEPH. *Univ. of Illinois.* (Physiol.)

2:15 **656.** Uptake of plasma proteins by neoplastic liver cells. STANLEY COHEN,* SAM M. BEISER AND KONRAD C. HSU.* *Columbia Univ.* (Pathol.)

2:30 **657.** Histochemical studies on hydrolytic enzyme activity of muscle. HARVEY GOLDMAN* AND DAVID G. FREIMAN. *Beth Israel Hosp. and Harvard Med. Sch.* (Pathol.)

2:45 **658.** Relation of acid phosphatase activity to secretory activity in endocrine organs. HAROLD JOHN SOBEL.* *Mt. Sinai Hosp., New York.* (Pathol.)

3:00 **659.** A general morphological reaction of nuclei to polyelectrolytes. JOSEPH A. FALZONE, JR.* *Natl. Insts. of Health.* (Physiol.)

3:15 **660.** Catalase activity in subcellular fractions of neoplastic and liver tissues. LEO A. MILLER* AND ANNA GOLDFEDER. *New York Univ.* (Physiol.)

3:30 **661.** Centrifugal subfractionation of bone marrow. SADEK HILAL,* DONN G. MOSSER,* M. K. LOKEN* AND R. C. LILLEHEI.* *Univ. of Minnesota Hosp.* (Pathol.)

3:45 **662.** Active binding of calcium by mitochondria. FRANK D. VASINGTON* AND JEROME V. MURPHY.* *Johns Hopkins Univ.* (Physiol.)

4:00 **663.** Sodium, chloride, mitochondria and pH. JAMES L. GAMBLE, JR.* *Johns Hopkins Univ.* (Physiol.)

Exhibits—Inspection Periods

Monday: 8:00 A.M. to 5:00 P.M.
Tuesday through Friday: 8:45 A.M. to 5:00 P.M.

Tickets

Tickets for group breakfasts, luncheons and dinners; Society dinners, Smokers and Mixers; and other Federation functions will be on sale in the registration area, Lobby, Convention Hall.
Hours: Sunday, 12:00 noon to 11:00 P.M.; Monday through Thursday, 8:00 A.M. to 5:00 P.M.

Intersociety Symposia

See pages 459, 478, 502, 523, 544 for symposia on Effects of Hallucinogenic Drugs on Man, Gastroenterology, The Hemicholiniums, Lipid Metabolism, Use and Care of Laboratory Animals, and Viruses and Neoplasia.

Physiology Society Sessions—Tuesday, 9:00 a.m.

67. Weak Electrolyte Excretion

TUES. A.M.—CONVENTION HALL, ROOM 21

Chairman: W. S. Wilde

9:00 **664.** Effects of intravenous injections of uric acid on kidney. H. DUNCAN,* K. G. WAKIM AND L. E. WARD.* *Mayo Clinic and Mayo Fndn.*

9:15 **665.** Suppression of tubular secretion of uric acid by pyrazinamide in Dalmatian hound. T. YU, L. BERGER AND A. B. GUTMAN. *Mt. Sinai Hosp., New York.*

9:30 **666.** Simultaneous bidirectional transport of diodrast and PAH in necturus kidney. W. B. KINTER AND G. A. TANNER.* *Harvard Med. Sch.*

9:45 **667.** Renal excretion of tetracycline in dog. W. J. SULLIVAN* AND G. M. FANELLI.* *Lederle Labs.*

10:00 **668.** Relationship of renal tubular secretion of potassium and 3-methylaminoisocamphane hydrochloride (mecamylamine) in dog. L. A. PILKINGTON* AND M. J. KEYL.* *Univ. of Oklahoma Sch. of Med.*

10:15 **669.** Renal transport of organic anions; unifying hypothesis. A. DESPOPOULOS. *Univ. of Louisville Med. Sch.*

10:30 **670.** Effect of organomercurials in hydrated man. M. H. GOLDSTEIN,* M. F. LEVITT AND A. D. HAUSER.* *Mt. Sinai Hosp., New York.*

10:45 **671.** Enhanced calcium and phosphate excretion following intrarenal arterial injection of digitalis glycosides. J. D. KOSOVSKY* AND S. KUPFER. *Mt. Sinai Hosp., New York.*

11:00 **672.** Functional evaluation of isolated perfused rat kidney. A. W. BAUMAN.* *Univ. of Rochester.*

11:15 **673.** Response of isolated perfused dog kidneys to epinephrine. D. M. WORTHEN,* L. B. HINSHAW AND Q. N. ANDERSON.* *Univ. of Minnesota.*

68. Hypothermia

TUES. A.M.—CONVENTION HALL, ROOM 13

Chairman: L. D. Carlson

9:00 **674.** Effect of hypothermia on responses to imposed tracheal obstruction. J. SALZANO AND F. G. HALL. *Duke Univ. Med. Ctr.*

9:15 **675.** Effects of oxygen inhalation on responses to cold exposure. D. M. MACCANON AND D. D. EITZMAN.* *Univ. of South Dakota and Chicago Med. Sch.*

9:30 **676.** Hypothermic protection against asphyxia in newborn puppies. J. A. MILLER, JR. AND F. S. MILLER.* *Tulane Univ. Sch. of Med.*

9:45 **677.** Rewarming following profound hypothermia. E. J. FEDOR,* J. W. SMITH, JR. AND B. FISHER. *Univ. of Pittsburgh.*

10:00 **678.** Response of hypothermic heart to perfusion with venous blood. F. GOLLAN, M. W. WOLCOTT* AND C. G. WHERRY.* *VA Hosp. and Univ. of Miami.*

10:15 **679.** Effect of deep hypothermia on venous and arteriolar beds. R. L. KAHLER, A. GOLDBLATT,* AND E. BRAUNWALD. *Natl. Heart Inst.*

10:30 **680.** Cold vasodilatation after iontophoresis with adrenaline and noradrenaline. W. R. KEATINGE.* *Univ. of Cambridge, England.*

10:45 **681.** Blood flow to various tissues in nomothermic and hypothermic total body perfusion in the dog. W. D. KELLY,* C. L. PROVENCE* AND N. M. TROTMAN. *VA Hosp. and Univ. of Minnesota.*

11:00 **682.** Body glucose as fuel for cold-thermogenesis in fasted rat. F. DEPOCAS. *Natl. Res. Council, Ottawa.*

11:15 **683.** Effect of reserpine on body temperature regulation of albino rat during exposure to cold. R. E. TAYLOR, JR.* *Univ. of Florida.*

11:30 **684.** Influence of body temperature reduction on response acquisition in mice. W. B. ESSMAN,* F. N. SUDAK* AND J. R. BLUMSTEIN. *Albert Einstein Coll. of Med.*

69. Carotid Receptors; Cardiac Output

TUES. A.M.—TRAYMORE, AMERICAN ROOM

Chairman: M. B. Visscher

9:00 **685.** Carotid artery occlusion reflex in dogs before and after anesthesia. G. G. ARMSTRONG, JR.* *Univ. Med. Ctr., Jackson, Mississippi.*

9:15 **686.** Catecholamine response to stimulation of carotid sinus reflexes in intact and adrenalectomized dogs. E. FISHER,* T. WALTON,* R. LINARES* AND W. M. BOCKER. *Howard Univ.*

9:30 **687.** Depletion of myocardial norepinephrine in hemorrhagic hypotension. V. V. GLAVIANO AND B. COLEMAN.* *Stritch Sch. of Med. and Loyola Univ.*

9:45 **688.** Cardiovascular effects of chronic partial carotid sinus compression in dogs. J. M. LITTLE, E. A. CONRAD* AND R. A. CORDELL.* *Bowman Gray Sch. of Med.*

10:00 **689.** Hypoxia and sympathoadrenal activity. E. C. GERST, Y. NAAMAN,* D. RODIL,* C. E. WOLF* AND W. S. ROOT. *Columbia Univ.*

10:15 **690.** Cardiovascular response to carotid body stimulation. S. E. DOWNING,* J. P. REMENSNYDER* AND J. H. MITCHELL. *Natl. Insts. of Health.*

10:30 **691.** Cardiac response to sudden increase in outflow resistance. E. S. IMPERIAL,* H. A. ZIESKE, JR.* AND M. N. LEVY. *St. Vincent Charity Hosp., Cleveland.*

10:45 **692.** Effect of pericardium on left ventricular volume and pressure. E. A. RHODE* AND J. P. HOLT. *Univ. of California, Davis and Univ. of Louisville.*

11:00 **693.** Effects of phosphorylative uncoupling in tissues on cardiac output of intact animals. W. E. HUCKABEE. *Boston Univ. and Massachusetts Mem. Hosp.*

11:15 **694.** Excitatory and inhibitory patterns of cardiovascular response elicited by stimulation of hypothalamus in dog. C. N. PEISS. *Loyola Med. Sch.*

11:30 **695.** Hypo-hypercapnia and cardiac output. W. K. LI,* F. F. KAO, G. MCCOY* AND M. H. HARMEL.* *State Univ. of New York.*

11:45 **696.** Influence of season and temperature on cardiac output in chickens. J. A. VOGEL* AND P. D. STURKIE. *Rutgers Univ.*

70. Pulmonary Diffusion; Hemoglobin

TUES. A.M.—TRAYMORE, TRAYMORE ROOM

Chairman: E. P. Radford, Jr.

9:00 **697.** Arterial blood gas tensions during exercise in normal subjects. M. B. MCILROY AND A. HOLMGREN.* *Univ. of California, San Francisco.*

9:15 **698.** Pulmonary diffusion following surgery with inhalation anesthesia. L. T. ELLISON,* A. R. NIX* AND R. G. ELLISON.* *Med. Coll. of Georgia.*

9:30 **699.** Effect of isuprel infusion on increase in pulmonary diffusing capacity for CO produced by pressure suit inflation. J. C. ROSS* AND J. L. ELLER.* *Indiana Univ. Sch. of Med.*

9:45 **700.** Diffusion studies in congenital heart disease. G. BUCCI,* C. D. COOK AND J. F. HAMANN.* *Children's Hosp. Med. Ctr. and Harvard Med. Sch.*

10:00 **701.** Small vessel hematocrit in lungs. A. COSENTINO,* W. STOREY* AND N. C. STAUB.* *U. S. Army Med. Res. and Nutr. Lab., Denver and Cardiovascular Res. Inst., Univ. of California, San Francisco.*

10:15 **702.** Measurement of pulmonary tissue volume and blood flow by rebreathing method. B. M. LEWIS, A. FURUSHO* AND P. K. ADHIKARI.* *Wayne State Univ. Coll. of Med.*

10:30 **703.** Statistical mechanical analysis of oxygen-hemoglobin equilibrium. E. P. RADFORD, JR. *Harvard Sch. of Public Health.*

10:45 **704.** Hemoglobin characteristics and oxygen affinities of bloods of Dorset ewes. G. MESCHIA,* M. NAUGHTON,* F. C. BATTAGLIA,* A. HELLEGERS* AND D. H. BARRON. *Yale Univ., MIT and Johns Hopkins Univ.*

11:00 **705.** Absence of effect of intravenous fat emulsion on oxyhemoglobin dissociation. S. M. CAIN. *Sch. of Aviation Med., Brooks AFB.*

71. CNS Organization

TUES. A.M.—TRAYMORE, ROSE ROOM

Chairman: C. N. Woolsey

9:00 **706.** Modes of synaptic operation and their relevance for pattern formation in an integrative ganglion. F. STRUMWASSER. *Walter Reed Army Inst. of Res.*

9:15 **707.** Direct inhibition of Mauthner's cells. E. RETZLAFF, J. FONTAINE, B. PASAMANICK AND C. D. LEAKE. *Ohio State Univ.*

9:30 **708.** Effects of organic buffer (THAM) on central respiratory mechanisms in cats. S. H. NGAI, G. G. NAHAS AND S. C. WANG. *Columbia Univ.*

9:45 **709.** Neural correlates of bats' resistance to jamming. A. D. GRINNELL* AND D. R. GRIFFIN. *Harvard Biol. Labs.*

10:00 **710.** Human middle ear muscle reflex activity. E. S. MENDELSON. *Naval Air Material Ctr., Philadelphia.*

10:15 **711.** Persistence of thermal polypnea in rabbits after habenulectomy. RONALD GRANT. *Stanford Univ.*

10:30 **712.** Effects of section of corpus callosum on decompression hypoxia and on pentylenetetrazol (Metrazol) convulsions. S. J. MANAX* AND G. W. STAVRAKY. *Univ. of Western Ontario.*

10:45 **713.** Hypoglycemia induced by neurogenic stimulation. M. A. SLUSHER. *UCLA.*

11:00 **714.** Thalamic influence upon tremor induced by mesencephalic stimulation. E. A. SPIEGEL, E. G. SZEKELY* AND H. SPULER.* *Temple Univ. Med. Ctr.*

11:15 **715.** Thalamic organization of pain in man. F. R. ERVIN* AND V. H. MARK.* *Massachusetts Gen. Hosp.*

11:30 **716.** Brain stem, EEG and cortical vasomotor reactions. K. HUH,* W. R. DARMODY,* G. S. SCRATCH* AND F. MORIN. *Wayne State Univ.*

72. Muscle Membrane: Smooth Muscle

TUES. A.M.—TRAYMORE, BELVEDERE ROOM

Chairman: A. Sandow

9:00 **717.** Membrane potentials in skeletal muscle of normal and of congenitally myotonic goats. S. H. BRYANT. *Univ. of Cincinnati Coll. of Med.*

9:15 **718.** Effects of variations in calcium ion on transmembrane potentials in perfused frog hearts. F. WARE. *Sch. of Aviation Med., Brooks AFB.*

9:30 **719.** Differences in membrane conductance components of crayfish and lobster muscle fibers. L. GIRARDIER,* J. P. REUBEN* AND H. GRUNDFEST. *Columbia Univ.*

9:45 **720.** Method for measuring membrane potential of intracellularly perfused single skeletal muscle fibers. P. W. DAVIES. *Johns Hopkins Sch. of Med.*

10:00 **721.** Crucial experiment in support of fixed charge induction hypothesis. G. LING AND M. OCHSENFELD.* *Eastern Pennsylvania Psychiat. Inst., Philadelphia.*

10:15 **722.** Effects of external K on Na^{24} loss from frog muscle fibers. P. HOROWICZ* AND C. J. GERBER.* *Washington Univ. Sch. of Med.*

10:30 **723.** Role of connective tissue in responses of whole muscle to osmotic changes. T. B. CALHOON. *Med. Coll. of South Carolina.*

10:45 **724.** Resting potentials of gastrocnemius fibers in unanesthetized, decerebrate rats. G. M. EMERSON,* W. KLIP* AND J. M. BRUHN. *Univ. of Alabama Med. Ctr.*

11:00 **725.** Ionic composition and permeability of smooth muscle. R. P. DURBIN AND R. R. MONSON.* *Harvard Med. Sch.*

11:15 **726.** Variation of potassium fluxes in smooth muscle. L. M. BARR* AND D. B. SIDERS.* *Univ. of Michigan.*

11:30 **727.** Effects of ionic composition on smooth muscle reactivity to vasoactive substances. L. HORN,* H. F. KROHN,* AND B. W. ZWEIFACH. *New York Univ. Med. Ctr.* (Pathol.)

11:45 **728.** Ureteral peristalsis—diuresis, obstruction and histamine. S. BOYARSKY* AND J. MARTINEZ.* *Albert Einstein Coll. of Med.*

12:00 **729.** Method for simultaneously recording electrical and mechanical activity of intestine. A. BORTOFF.* *Western Reserve Univ.*

Physiology Society Coffee Lounge

Monday through Friday, 8:30 A.M.–5:00 P.M., Traymore, Sun Deck

Physiology Society Sessions—Tuesday, 1:30 p.m.

73. Active Transport I

TUES. P.M.—CONVENTION HALL, ROOM 21

Chairman: R. P. Durbin

1:30 **730.** Water transport across membrane analogues. V. W. SIDEL* AND J. F. HOFFMAN. *Natl. Heart Inst.*

1:45 **731.** Relationship of carbohydrate metabolism to sodium transport. R. H. MAFFLY* AND I. S. EDELMAN. *Univ. of California, San Francisco.*

2:00 **732.** Effect of aldosterone and aldosterone-inhibitor SC8109 on sodium transport in isolated frog skin. D. E. PENNEY,* R. D. MCAFEE* AND W. LOCKE.* *VA Hosp. and Ochsner Fndn., New Orleans.*

2:15 **733.** Effect of sodium replacement by guanidine and hydrazine on frog skin current. T. HOSHIKO. *Western Reserve Univ.*

2:30 **734.** Choline acetylase and choline esters in frog skin. D. C. KOBLICK. *Univ. of California, Berkeley.*

2:45 **735.** Effect of pH and pCO_2 on response of toad bladder to vasopressin. M. A. HOLLIDAY,* I. L. SCHWARTZ, J. MARC-AURELE,* J. HARRAH* AND D. ELLIOTT.* *Univ. of Pittsburgh and Brookhaven Natl. Lab.*

3:00 **736.** Ionic and electrical gradients across frog gastric mucosa. J. B. HARRIS AND I. S. EDELMAN. *Univ. of California, San Francisco.*

3:15 **737.** Active transport of sulfate by frog gastric mucosa. C. A. M. HOGBEN. *George Washington Univ.*

3:30 **738.** Active transport of nonelectrolytes and potential gradients across intestinal segments in vitro. D. SCHACHTER* AND J. S. BRITTEN.* *Columbia Univ. and Presbyterian Hosp.*

3:45 **739.** Ionic effect on active transport of nonelectrolytes. T. Z. CSAKY. *Univ. of North Carolina.*

4:00 **740.** Na and K transport in E. coli. S. G. SCHULTZ* AND A. K. SOLOMON. *Harvard Med. Sch.*

4:15 **741.** Transport of Na and K by kidney mitochondria. F. ULRICH. *Yale Univ.*

74. Cold Adaptation; Hibernation

TUES. P.M.—CONVENTION HALL, ROOM 13

Chairman: N. Pace

1:30 **742.** Topical adaptation to cold in the rabbit ear. C. J. EAGAN.* *Arctic Aeromed. Lab.* (Immunol.)

1:45 **743.** Temperature acclimation and the nervous system in fish. B. I. ROOTS. *Univ. of Illinois.*

2:00 **744.** Changes in finger temperature response to ice water immersion during chronic cold exposure. T. ADAMS* AND R. E. SMITH.* *Univ. of Washington.*

2:15 **745.** Temperature regulation in Alaskan eskimo. B. G. COVINO. *Univ. of Buffalo.*

2:30 **746.** Alteration in adipose tissue lipid metabolism induced by cold acclimation. J. K. PATKIN* AND E. J. MASORO. *Tufts Univ.*

2:45 **747.** Site and mechanism of norepinephrine-calorigenesis in cold acclimatized rat. J. P. HANNON AND A. M. LARSON.* *Arctic Aeromed. Lab.*

3:00 **748.** Mast cells in ears of continuously cold exposed rats. O. HEROUX. *Natl. Res. Council., Ottawa.*

3:15 **749.** Effect of chronic cold exposure on cytochrome C concentration in tissues of rat. G. J. KLAIN.* *Arctic Aeromed. Lab.*

3:30 **750.** Utilization of acetate-1-C^{14} by hepatic tissue from cold-exposed and hibernating hamsters. A. DENYES* AND J. CARTER.* *Queen's Univ., Kingston, Ontario.*

3:45 **751.** Effect of various autonomic drugs on hibernating cycle. C. P. LYMAN AND R. C. O'BRIEN.* *Harvard Med. Sch.*

4:00 **752.** Circulatory patterns during dehibernation of the 13-lined ground squirrel. R. W. BULLARD AND G. E. FUNKHOUSER.* *Indiana Univ.*

75. Pulmonary Circulation I

TUES. P.M.—TRAYMORE, AMERICAN ROOM

Chairman: J. W. Severinghaus

1:30 **753. INTRODUCTORY REMARKS.** Physiology of pulmonary circulation. J. W. SEVERINGHAUS. *Univ. of California Hosp., San Francisco.*

2:00 **754.** Method for measuring pulmonary arterial blood volume; values obtained in dogs. K. A. FEISAL,* J. SONI* AND A. B. DUBOIS. *Univ. of Pennsylvania.*

2:15 **755.** Shunts in pulmonary circuit in dog. G. C. RING, A. S. BLUM* and T. KURBATOV.* *Univ. of Miami.*

2:30 **756.** Mechanical factors affecting pulmonary vascular resistance in living dogs. S. PERMUTT,* B. BROMBERGER-BARNEA AND H. N. BANE.* *Natl. Jewish Hosp. and Univ. of Colorado.*

2:45 **757.** Response of pulmonary vascular bed of unanesthetized resting dogs to hypoxia. O. G. THILENIUS,* P. B. HOFFER* AND R. S. FITZGERALD.* *Univ. of Chicago.*

3:00 **758.** Measurement of pulmonary capillary blood flow during exercise by a foreign gas technique. D. V. BATES, M. R. BECKLAKE,* C. J. VARVIS* AND M. MCGREGOR. *Royal Victoria Hosp. and McGill Univ., Montreal.*

3:15 **759.** Tonic vasoconstrictor activity in dog's pulmonary circulation. A. A. BECHTEL.* *Hahnemann Med. Coll.*

3:30 **760.** Effects of positive pressure lung inflation on pulmonary vascular dynamics. P. H. GERST.* *Presbyterian Hosp., New York.*

76. Renal Blood Flow

TUES. P.M.—TRAYMORE, TRAYMORE ROOM

Chairman: A. C. Barger

1:30 **761.** Characteristics of pressure-flow regulation of normal kidney. H. E. SCHMID, JR.* AND M. P. SPENCER. *Bowman Gray Sch. of Med.*

1:45 **762.** Time course of autoregulation of renal blood flow. R. B. HARVEY. *Univ. of Utah.*

2:00 **763.** Renal autoregulation; capillary filtration or myogenic response? A. M. SCHER, P. MCDONALD* AND A. R. KOCH. *Univ. of Washington.*

2:15 **764.** Further evidence for unimportance of renal autoregulation. J. B. LANGSTON,* A. C. GUYTON AND C. C. HULL.* *Univ. of Mississippi Med. Ctr.*

2:30 **765.** Changes in renal vascular resistance reflexly induced by carotid artery occlusion. J. P. GILMORE. *Natl. Insts. of Health.*

2:45 **766.** Erroneous renal vascular resistance calculations due to discrepancies in measurement of renal blood flow following ureteral occlusion and of intrarenal venous pressure through range of autoregulation. L. B. HINSHAW, A. A. HAKIM,* D. M. WORTHEN* AND Q. N. ANDERSON.* *Univ. of Minnesota.*

3:00 **767.** Analysis of dynamic pressure-flow relationship in renal artery. H. OKINO* AND M. P. SPENCER. *Bowman Gray Sch. of Med.*

3:15 **768.** Renal blood flow as measured by direct and indirect methods. M. ATIK* AND R. GUTIERREZ-SAENZ.* *Louisiana State Univ.*

3:30 **769.** Estimation of effective renal plasma flow using I^{131}-labeled Hippuran. B. G. SMITH,* J. U. SCHLEGEL AND R. M. O'DELL.* *Tulane Univ.*

3:45 **770.** Relation of composition of fluid draining from renal vein of excised kidney to intrarenal hematocrit. C. POLOSA* AND W. F. HAMILTON. *Med. Coll. of Georgia.*

77. Cortex Organization

TUES. P.M.—TRAYMORE, ROSE ROOM

Chairman: H. D. Patton

1:30 **771.** Ontogenetic changes in evoked activity in pyramidal and "extrapyramidal" pathways (cat). E. M. HOUSEPIAN,* C. R. NOBACK* AND D. P. PURPURA. *Columbia Univ.*

1:45 **772.** Physiological consequences of axon-collateral proliferation in isolated immature neocortex. D. P. PURPURA AND E. M. HOUSEPIAN.* *Columbia Univ.*

2:00 **773.** Electrocortical synchronization in cats from reduction of proprioceptive drive caused by a muscle relaxant (Flaxedil). R. HODES. *Mt. Sinai Hosp.*

2:15 **774.** EEG synchronization from medullary structures. J. MAGNES, G. MORUZZI AND O. POMPEIANO. *Univ. of Pisa, Italy.*

2:30 **775.** Cerebellar influences on evoked cerebral response. S. MIZUNO AND R. S. SNIDER. *Northwestern Univ.*

2:45 **776.** Mescaline spike activity of cerebral cortex elicited by direct stimulation. S. OCHS, A. DOWELL* AND I. S. RUSSELL.* *Indiana Univ.*

3:00 **777.** Unit responses in afferent pathways. L. L. BOYARSKY, D. FRAZIER AND G. SANTAMBROGIO.* *Univ. of Kentucky.*

3:15 **778.** Variability of response parameters of simultaneously recorded cortical neurons. V. E. AMASSIAN, J. MACY, JR.* AND H. J. WALLER*. *Albert Einstein Coll. of Med.*

78. Shock

TUES. P.M.—TRAYMORE, BELVEDERE ROOM

Chairman: W. S. Root

1:30 **779.** Lymph of abdominal organs in shock. F. ALICAN* AND JAMES D. HARDY. *Univ. of Mississippi Med. Ctr.*

1:45 **780.** Effects of various pharmacological agents on canine intestinal hemodynamics during endotoxin shock. J. K. LONGERBEAM* AND R. C. LILLEHEI.* *Univ. of Minnesota.*

2:00 **781.** Oxygen debt as common parameter in irreversible hemorrhagic shock. J. W. CROWELL. *Univ. of Mississippi Med. Ctr.*

2:15 **782.** Biologic assay for blood-borne endotoxin during hemorrhagic shock. A. L. NAGLER* AND B. W. ZWEIFACH. *New York Univ. Med. Ctr.*

2:30 **783.** Adrenal medullary and cortical secretion in hemorrhagic shock. S. S. LEVIN,* W. M. PARKINS, H. M. VARS AND W. S. BLAKEMORE. *Univ. of Pennsylvania.*

2:45 **784.** Lethal factor in blood following occlusion of superior mesenteric artery. A. JANOFF* and A. L. NAGLER.* *New York Univ. Med. Ctr.* (Immunol.)

3:00 **785.** Loss of vasomotor control in hemorrhagic shock. C. F. ROTHE,* F. C. SCHWENDENMANN* AND E. E. SELKURT. *Indiana Univ. Sch. of Med.*

3:15 **786.** Plasma protein changes in dogs following a transfusion or hemorrhage. S. DEAVERS,* E. L. SMITH AND R. A. HUGGINS. *Baylor Med. Coll.*

3:30 **787.** Simultaneous measurement of blood volume in man by use of chromium-51, Evans blue and carbon monoxide. G. K. DANIELSON* AND W. S. BLAKEMORE.* *Univ. of Pennsylvania Sch. of Med.*

Physiology Society Business Meeting

TUESDAY, 4:30 P.M.—TRAYMORE, AMERICAN ROOM

Biochemistry Society Sessions—Tuesday, 9:00 a.m.

79. Protein Metabolism II

TUES. A.M.—CONVENTION HALL, BALLROOM

Chairman: G. D. Novelli

9:00 **788.** Biosynthesis of proteins. HERBERT JEHLE. *George Washington Univ.*

9:15 **789.** Properties of D-alanyl-D-alanine synthetase. F. C. NEUHAUS.* *Univ. of Illinois.*

9:30 **790.** Effect of metallic ions on the incorporation of amino acids into protein and RNA of the rat lens. ANIMA DEVI* AND SIDNEY LERMAN.* *Univ. of Rochester.*

9:45 **791.** Enzymes associated with ribosomes. W. WARREN* AND D. GOLDTHWAIT. *Western Reserve Univ.*

10:00 **792.** Examination of ribosomes for intermediates in protein synthesis. H. K. KIHARA,* R. J. YOUNG* AND H. O. HALVORSON. *Univ. of Wisconsin.*

10:15 **793.** A cell-free amino acid incorporating system from mouse liver. CHARLOTTE R. LEA AND G. DAVID NOVELLI. *Oak Ridge Natl. Lab.*

10:30 **794.** Incorporation of amino acids by cell-free preparations from maize seedlings. RUSTY J. MANS.* *Oak Ridge Natl. Lab.*

10:45 **795.** RNA and protein synthesis by isolated nuclei. JOON RHO*, MAX BIRNSTIEL,* MARGARET CHIPCHASE* AND JAMES BONNER. *California Inst. of Technology.*

11:00 **796.** Some characteristics of a cell-free DNAase sensitive system incorporating amino acids into protein. J. HEINRICH MATTHAEI* AND MARSHALL W. NIRENBERG.* *Natl Insts. of Health.*

80. Oxidative Enzymes I

TUES. A.M.—CONVENTION HALL, ROOM H

Chairman: H. Beinert

9:00 **797.** Nonenzymic interactions of DPN^+ with orthophosphates and certain other anions. S. G. A. ALIVISATOS AND F. UNGAR.* *Chicago Med. Sch.*

9:15 **798.** Shape of the surface of the glutamic dehydrogenase-DPN complex. HARVEY F. FISHER* AND LOIS L. MCGREGOR.* *Henry Ford Hosp.*

9:30 **799.** Effects of 1,10-phenanthroline and other aromatic compounds on structure of crystalline beef liver glutamic dehydrogenase. K. LEMONE YIELDING* AND GORDON M. TOMKINS. *Natl. Insts. of Health.*

9:45 **800.** Resolution of pyruvate and α-ketoglutarate dehydrogenation complexes. LESTER J. REED AND MASAHIKO KOIKE.* *Univ. of Texas.*

10:00 **801.** β-Hydroxybutyric dehydrogenase of beef heart mitochondria. PETER JURTSHUK, JR. AND ICHIRO SEKUZU. *Univ. of Wisconsin.*

10:15 **802.** Bacterial D(−)-β-hydroxybutyric dehydrogenase. M. DOUDOROFF, J. M. MERRICK* AND R. CONTOPOULOU.* *Univ. of California, Berkeley.*

10:30 **803.** Comparative study of two malic dehydrogenases from beef heart. L. SIEGEL* AND S. ENGLARD. *Albert Einstein Coll. of Med.*

10:45 **804.** Evidence for a mammalian D-glyceric dehydrogenase. J. E. WILLIS* AND H. J. SALLACH. *Univ. of Wisconsin Med. Sch.*

11:00 **805.** Evidence for hepatic parenchymal cellular heterogeneity with respect to homologous enzymes. RICHARD F. BAKEMEIER AND GORDON M. TOMKINS. *Natl. Insts. of Health.*

11:15 **806.** Evidence for the presence of multiple soluble steroid reductases (5β) in rat liver. ARNOLD N. WEINBERG* AND JEAN CURREN.* *Natl. Insts. of Health.*

11:30 **807.** Direct evidence for formation of steroid-DPN complexes. CARL MONDER.* *Albert Einstein Coll. of Med.*

81. Phospholipid Metabolism

TUES. A.M.—CONVENTION HALL, STAGE

Chairman: E. P. Kennedy

9:00 **808.** Enzymatic hydrolysis of plasmalogen. HUBER R. WARNER.* *Univ. of Michigan.*

9:15 **809.** Chromatography of phospholipids in fatty liver. W. E. CORNATZER AND ADOLF WALSER.* *Univ. of North Dakota Sch. of Med.*

9:30 **810.** Quantitative fractionation of brain lipids. GEORGE ROUSER, JOHN O'BRIEN,* A. J. BAUMAN,* RUDOLFO PAOLETTI* AND NICHOLAS NICOLAIDES.* *City of Hope Med. Ctr.*

9:45 **811.** Structure of beef brain polyphosphoinositide. CLINTON E. BALLOU AND RAY TOMLINSON.* *Univ. of California, Berkeley.*

10:00 **812.** Selective ester formation in lecithin synthesis. WILLIAM E. M. LANDS.* *Univ. of Michigan.*

10:15 **813.** CDP-diglyceride. BERNARD W. AGRANOFF AND ROY M. BRADLEY.* *Natl. Insts. of Health and Univ. of Michigan.*

10:30 **814.** 2-Amino-2-methylpropanol on liver phospholipid formation. WILLIAM J. LONGMORE* AND DWIGHT J. MULFORD. *Univ. of Kansas.*

10:45 **815.** Phosphatide metabolism in developing brain. W. C. MCMURRAY.* *Univ. of Western Ontario.*

11:00 **816.** Formation of phosphatidyl ethanolamine in liver preparations. CAMILLO ARTOM. *Bowman Gray Sch. of Med. and Wake Forest Coll.*

11:15 **817.** Phospholipid patterns during embryonic development in the chick. ALLAN L. BIEBER,* VERNON H. CHELDELIN AND ROBERT W. NEWBURGH. *Oregon State Coll.*

11:30 **818.** Mono- and dimethylethanolamine containing phospholipids from Neurospora crassa. MICHAEL O. HALL* AND JOSEPH F. NYC. *UCLA.*

11:45 **819.** In vitro incorporation of amino acids by the phospholipids of the Ehrlich ascites cells. IHOR ZAJAC* AND W. L. GABY. *Hahnemann Med. Coll. and Hosp.*

82. Plasma Proteins

TUES. A.M.—CONVENTION HALL, ROOM F

Chairman: F. W. Putnam

9:00 **820.** Dissociation of macroglobulin; evaluation of plasmapheresis and penicillamine therapy. MORTON D. PRAGER,* JOSEPH M. HILL,* ELLEN LOEB,* MARGARET GOERNER* AND INA CLAIRE ATKINS.* *Wadley Res. Inst. and Blood Bank.*

9:15 **821.** Bisalbuminemia: binding properties of the two albumins. EDWARD J. SARCIONE* AND C. WILLIAM AUNGST.* *Roswell Park Mem. Inst.*

9:30 **822.** Optical rotatory behavior of plasma albumin

near pH 4. JOSEPH F. FOSTER AND WILLIAM J. LEONARD, JR.* *Purdue Univ.*

9:45 **823.** Phosphatidylserine-bovine serum albumin interactions. DONALD G. THERRIAULT. *Univ. of Louisville and U.S. Army Med. Res. Lab.*

10:00 **824.** Site of cleavage of γ-globulins by papain. FRANK W. PUTNAM, LYDIA T. LYNN* AND CAROLINE W. EASLEY.* *Univ. of Florida.*

10:15 **825.** Purification of bovine transferrins by rivanol fractionation. BECCA PATRAS* AND W. H. STONE. *Univ. of Wisconsin.*

10:30 **826.** Variations in sialic acid content of human transferrins. W. CAREY PARKER* AND ALEXANDER G. BEARN.* *Rockefeller Inst.*

10:45 **827.** Proteolysis of human serum beta lipoproteins. HUGH J. MCDONALD AND LEONARD J. BANASZAK.* *Loyola Univ.*

11:00 **828.** Subfractionation of low-density lipoproteins by amylopectin sulfate. PETER BERNFELD AND THOMAS F. KELLEY.* *Bio-Research Inst.*

11:15 **829.** Modification of ceruloplasmin induced by removal of copper. H. F. DEUTSCH AND C. B. KASPER.* *Univ. of Wisconsin.*

11:30 **830.** Plasma albumin levels in the CCl_4 poisoned rat. SAUL B. GILSON.* *Jewish Mem. Hosp.*

83. Nucleic Acids I

TUES. A.M.—CONVENTION HALL, ROOM G

Chairman: E. Chargaff

9:00 **831.** A new macromolecular particle associated with alfalfa mosaic virus. J. J. KELLEY* AND PAUL KAESBERG. *Univ. of Wisconsin.*

9:15 **832.** Inactivation of bacteriophage with polyanions. P. T. MORA,* B. G. YOUNG* AND S. RIZVI.* *Natl. Insts. of Health*

9:30 **833.** Double refraction of oriented T_2 bacteriophage. M. A. LAUFFER, I. J. BENDET* AND D. A. GOLDSTEIN.* *Univ. of Pittsburgh.*

9:45 **834.** Chemistry and antigenicity of DNA. LAWRENCE GROSSMAN, DAVID STOLLAR* AND KATHERINE HERRINGTON.* *Brandeis Univ.*

10:00 **835.** Antigenic determinant groups of bacteriophage DNA. EDITH TOWNSEND,* WILLIAM T. MURAKAMI* AND HELEN VAN VUNAKIS. *Brandeis Univ.*

10:15 **836.** Sedimentation behavior of tobacco mosaic virus in relation to cation content. FU-CHUAN CHAO,* LAWRENCE F. ENG* AND HUBERT S. LORING. *Stanford Univ.*

10:30 **837.** Integrity of high molecular weight RNA. W. MÖLLER* AND H. BOEDTKER.* *Harvard Univ.*

10:45 **838.** Metals in TMV-RNA. WARREN WACKER,* MILTON GORDON AND JOHN HUFF.* *Harvard Med. Sch., Peter Bent Brigham Hosp. and Univ. of Washington.*

11:00 **839.** Alteration in RNA structure produced by methionine deprivation. LEWIS R. MANDEL* AND ERNEST BOREK. *Columbia Univ.*

11:15 **840.** Structure proposal for single strand RNA. MICHAEL L. INGERMAN AND RAYMOND M. SHIRVEN. *George Washington Univ.*

11:30 **841.** Metabolic effects of hybridization in amphibia. STANLEY COHEN. *Vanderbilt Univ. Sch. of Med.*

84. Pyrimidine Metabolism

TUES. A.M.—AMBASSADOR, RENAISSANCE ROOM

Chairman: C. Heidelberger

9:00 **842.** Effect of arabonucleosides on growth and metabolism of E. coli. LIBOR SLECHTA.* *Upjohn Co.*

9:15 **843.** Effects of 5-iodouracil and 5-iododeoxyuridine on a pyrimidine-resistant strain of Streptococcus faecalis. H. GUNTHER.* *Yale Univ. Sch. of Med.*

9:30 **844.** Biosynthesis of thymine from 3-methylaspartic acid. D. W. WOOLLEY AND I. H. KOEHELIK.* *Rockefeller Inst.*

9:45 **845.** Role of carbamyl-beta-alanine and related compounds in pyrimidine biosynthesis in neurospora. ROBERT L. HERRMANN* AND CYNTHIA THOMAS GRANT.* *Boston Univ. Sch. of Med.*

10:00 **846.** Glutamine as amino donor for cytidine nucleotide biosynthesis in E. coli. R. B. HURLBERT AND K. P. CHAKRABORTY.* *Univ. of Texas.*

10:15 **847.** Separation of feedback inhibition from activity of aspartate transcarbamylase (ATCase). JOHN C. GERHART* AND ARTHUR B. PARDEE. *Univ. of California, Berkeley.*

10:30 **848.** Inhibition by deoxyribonucleosides of the reproduction in culture of neoplastic mammalian cells. N. R. MORRIS* AND G. A. FISCHER.* *Yale Univ. Sch. of Med.*

10:45 **849.** Inhibition of thymidylate synthetase by 5-fluoro-2′-deoxyuridine-5′-monophosphate (FUDRP). CHARLES HEIDELBERGER AND K-U. HARTMANN. *Univ. of Wisconsin.*

11:00 **850.** Deoxycytidylate deaminase in Lactobacillus acidophilus R-26. A. J. SIEDLER, MARILYN T. HOLTZ* AND BARBARA S. HELLER.* *American Meat Inst. Fndn. and Univ. of Chicago.*

11:15 **851.** NMR of nucleotides VII. Conformation of deoxyribose in thymidine. CHRISTINE D. JARDETZKY.* *Harvard Univ.*

11:30 **852.** Altered nucleic acid metabolism in unbalanced bacterial growth due to vitamin B_{12} starvation. WILLIAM S. BECK, SUSAN A. HOOK,* AND MYRON LEVIN.* *Harvard Med. Sch. and Massachusetts Gen. Hosp.*

11:45 **853.** Vitamin B_{12} and purine metabolism in Lactobacillus leichmannii. GARY R. CRAVEN* AND MANCOURT DOWNING.* *Univ. of Colorado.*

12:00 **854.** Vitamin B_{12} and growth of Euglena gracilis. S. S. EPSTEIN,* J. B. WEISS,* P. BUSH* AND D. CAUSLEY.* *Hosp. for Sick Children and Rank Cintel., London.*

85. Carbohydrate Metabolism II

TUES. A.M.—AMBASSADOR, VENETIAN ROOM

Chairman: H. Lardy

9:00 **855.** Metabolism in bone slices from normal and parathyroid extract-treated rabbits. D. V. COHN AND B. K. FORSCHER.* *Kansas City VA Hosp. and Univ. of Kansas City Sch. of Dent.*

9:15 **856.** Comparative study of chronic administration of D- and L-3,3′,5-triiodothyronine in dogs. THEODORE ELLISON,* EDNA C. DICK,* EDWARD J. VAN LOON AND SAMUEL M. GREENBERG. *Smith, Kline and French Labs.*

9:30 **857.** Effects of thyroxine on amphibian pancreas: digestive enzyme levels and subcellular structure in metamorphosis. J. R. CLAYBROOK* AND ROBERT E. EAKIN. *Clayton Fndn. Biochem. Inst. and Univ. of Texas.*

9:45 **858.** Thyroid hormones and α-glycerophosphate oxidation. YA-PIN LEE* AND HENRY A. LARDY. *Univ. of Wisconsin.*

10:00 **858a.** Metabolism of pyruvate-2-C^{14} in normal and diabetic humans. I. ROSABELLE MCMANUS, PAUL SWEENEY,* AND ROBERT E. OLSON. *Univ. of Pittsburgh.*

10:15 **859.** An insulin-degrading enzyme isolated from beef liver. HENRY H. TOMIZAWA. *Fels Research Inst.*

10:30 **860.** Activation of glutathione reductase (GSSGR) in hemolyzates by stromata. P. E. CARSON,* W. K. LONG* AND C. E. ICKES.* *Univ. of Chicago.*

10:45 **861.** Glutathione reductase of rat liver. CHARLES E. MIZE* AND ROBERT G. LANGDON. *Johns Hopkins Univ.*

11:00 **862.** Factors affecting induction of glucose-6-phosphate dehydrogenase. TETSUO ONO* AND VAN R. POTTER. *Univ. of Wisconsin.*

86. Enzymes II

TUES. A.M.—AMBASSADOR, SURF ROOM

Chairman: G. Schmidt

9:00 **863.** Noncompetitive inhibition of invertase activity by urea. AURIN M. CHASE. *Princeton Univ.*

9:15 **864.** Organ-identifying enzymologic properties of alkaline phosphatase from rat intestine and liver. WILLIAM H. FISHMAN, SIDNEY GREEN* AND NORMA I. INGLIS.* *Tufts Univ.*

9:30 **865.** Action of nonspecific phosphomonoesterases on phosphoric esters without functional substituent groups. GERHARD SCHMIDT AND GUENTHER BARTSCH.* *Tufts Univ.*

9:45 **866.** Arylsulfatase of Aspergillus oryzae. JOSEPH D. CHERAYIL* AND HAROLD VAN KLEY.* *St. Louis Univ.*

10:00 **867.** Carbonic anhydrase from human erythrocytes. EGON RICKLI.* *Harvard Univ.*

10:15 **868.** Urocanase and pyridoxal-5-phosphate. NABA K. GUPTA* AND WILLIAM G. ROBINSON.* *Univ. of Michigan.*

10:30 **869.** Characteristics of carbamyl phosphate synthetase (CPS) of frog liver. DOROTHY M. SKINNER* AND MARY ELLEN JONES. *Brandeis Univ.*

10:45 **870.** Cystine reductase in animal tissues. LEAH T. MYERS* AND H. G. WORTHEN.* *Univ. of Minnesota.*

11:00 **871.** Determination of the rate of enzymatic hydrolysis of 6-amino penicillic acid. HARRY G. STEINMAN. *Natl. Inst. of Allergy and Infect. Dis.*

11:30 **872.** Enzymatic N-methylation of phenylethanolamine derivatives. JULIUS AXELROD. *Natl. Inst. of Mental Health.*

11:45 **873.** Properties of lens mutarotase. ALBERT S. KESTON. *Inst. for Med. Res. and Studies.*

Biochemistry Society Sessions—Tuesday, 1:30 p.m.

87. Genetics I

TUES. P.M.—CONVENTION HALL, BALLROOM

Chairman: R. D. Hotchkiss

1:30 **874.** Source of the infectious RNA obtained from tissues infected with eastern equine encephalitis virus. ALAN RICHTER* AND RICHARD S. CLARK.* *U.S. Army Chem. Corps Biol. Labs.*

1:45 **875.** Transformation to auxotrophy in B. subtilis. S. GREER,* L. HELDENMUTH* AND S. ZAMENHOF. *Columbia Univ.*

2:00 **876.** Characterization of DNA from bacteriophage λdg active in transforming E. coli. JOHN R. SIMMONS* AND DAVID S. HOGNESS. *Stanford Univ.*

2:15 **877.** Factors influencing deoxyribonucleic acid uptake and transformation in Bacillus subtilis strain 168. F. E. YOUNG* AND JOHN SPIZIZEN. *Western Reserve Univ.*

2:30 **878.** Molecular fate of transforming DNA. Z. LORKIEWICZ,* Z. OPARA-KUBINSKA* AND WACLAW SZYBALSKI.* *Univ. of Wisconsin.*

2:45 **879.** Stabilizing effect of spermine on B. subtilis transforming principle. H. TABOR. *Natl. Insts. of Health.*

3:00 **880.** Transduction in Bacillus subtilis. CURTIS B. THORNE. *Fort Detrick.*

3:15 **881.** Protein subunit of bacteriophage ØX-174. E. A. CARUSI* AND R. L. SINSHEIMER. *California Inst. of Technology.*

3:30 **882.** Protein of chemically evoked mutants of tobacco mosaic virus (TMV). A. TSUGITA* AND H. FRAENKEL-CONRAT. *Univ. of California, Berkeley.*

3:45 **883.** Electrophoretic patterns of alkaline phosphatase from various E. coli mutants. MARILYN L. BACH,* ETHAN R. SIGNER,* CYRUS LEVINTHAL* AND IRWIN W. SIZER. *MIT.*

88. Oxidative Phosphorylation I

TUES. P.M.—CONVENTION HALL, ROOM H

Chairman: A. L. Lehninger

1:30 **884.** Isolation of bovine brain mitochondria. R. E. BASFORD,* WILLIAM L. STAHL* AND L. M. NAPOLITANO.* *Univ. of Pittsburgh.*

1:45 **885.** Effect of guanidine derivatives on mitochondria BERTON C. PRESSMAN. *VA Hosp.* and *Univ. of Kansas.*

2:00 **886.** Uncoupling and inhibition of oxidative phosphorylation in housefly mitochondria. L. F. REMMERT, C. R. HEISLER* AND C. T. GREGG.* *Oregon State Coll.*

2:15 **887.** Enzymatic exchange of oxygen between inorganic phosphate and water. JERALD L. CONNELLY.* *Univ. of Wisconsin.*

2:30 **888.** Rapid formation of P^{32}-compounds from P_i^{32} by mitochondria. C. H. SUELTER,* M. DE LUCA,* J. B. PETER* AND P. D. BOYER. *Univ. of Minnesota.*

2:45 **889.** Effect of carbon dioxide on oxidative phosphorylation. HANS LÖW,* HARVEY KRUEGER* AND DANIEL M. ZIEGLER. *Univ. of Wisconsin.*

3:00 **890.** Dinitrophenol and arsenate stimulation of mitochondrial oxidations. RONALD W. ESTABROOK. *Univ. of Pennsylvania.*

3:15 **891.** Effect of uncoupling agents on mitochondrial oxidations. J. B. CHAPPELL.* *Univ. of Pennsylvania.*

3:30 **892.** Single and multisite inhibitors of energy-conserving reactions. B. CHANCE AND G. HOLLUNGER.* *Univ. of Pennsylvania.*

3:45 **893.** Sites of oxidative-phosphorylation between cytochrome *c* and O_2 in heart sarcosomes. JOSÉ RAMÍREZ* AND ADELA MÚJICA.* *Inst. Natl. de Cardiología.*

4:00 **894.** A natural uncoupling factor of oxidative phosphorylation. RONALD A. BUTOW* AND WALTER L. NELSON. *Cornell Univ.*

4:15 **895.** Quinones in some photosynthetic systems. R. C. FULLER AND R. M. SMILLIE.* *Brookhaven Natl. Lab.*

89. Carbohydrate Metabolism III

TUES P.M.—CONVENTION HALL, STAGE

Chairman: H. M. Kalckar

1:30 **896.** Ascorbic acid catabolism in guinea pigs. LOTHAR L. SALOMON* AND KAZKO ARAI.* *Univ. of Texas Sch. of Med.*

1:45 **897.** Effects of substances enhancing ascorbic acid biosynthesis on activities of UDPG dehydrogenase and UDPGA

pyrophosphatase. OSCAR TOUSTER AND SIEGFRIED HOLLMANN.* *Vanderbilt Sch. of Med.*

2:00 **898.** Nucleotide activation of liver microsomal glucuronidation. BURTON M. POGELL.* *Inst. de Investigaciones Bioquímicas, Buenos Aires.*

2:15 **899.** Phosphorylation of D-galacturonic acid by extracts from germinating seeds of *phaseolus aureus*. E. F. NEUFELD, D. S. FEINGOLD, G. A. KESSLER,* S. M. ILVES* AND W. Z. HASSID. *Univ. of California, Berkeley.*

2:30 **900.** Enzymatic formation of 4-deoxy-5-ketouronic acid from alginic acid. JACK PREISS* AND GILBERT ASHWELL. *Natl. Insts. of Health.*

2:45 **901.** Uronic acid biosynthesis by skin enzymes. BERNARD JACOBSON.* *Duke Univ.*

3:00 **902.** Isolation and synthesis of guanosine diphosphate hexoses from bovine mammary gland. DON M. CARLSON* AND R. G. HANSEN. *Michigan State Univ.*

3:15 **903.** Intermediates in conversion of GDP-D-mannose to GDP-L-fucose. V. GINSBURG. *Natl. Insts. of Health.*

3:30 **904.** UDPG-Pyrophosphorylase and TDPG-pyrophosphorylase in microorganisms and plants. JOHN H. PAZUR AND ELDON W. SHUEY.* *Univ. of Nebraska.*

3:45 **905.** Enzymatic synthesis of L-rhamnose. STUART KORNFELD* AND LUIS GLASER. *Washington Univ. Sch. of Med.*

4:00 **906.** Intermediates in TDP-rhamnose synthesis in *E. coli* strains. R. OKAZAKI,* T. OKAZAKI* AND J. L. STROMINGER. *Washington Univ. Sch. of Med.*

90. Nucleic Acids II

TUES. P.M.—CONVENTION HALL, ROOM F

Chairman: E. Volkin

1:30 **907.** Intracellular localization of inorganic polyphosphate in *neurospora crassa*. F. M. HAROLD* AND ALEXANDER MILLER.* *Natl. Jewish Hosp. and California Inst. of Tech.*

1:45 **908.** Kinetics and equilibria of polymerization catalyzed by phosphorylase. LEWIS B. BARNETT* AND LEONARD PELLER.* *Univ. of Wisconsin.*

2:00 **909.** Control of nucleic acid synthesis by ribose. RICHARD A. PEABODY* AND CHARLES HURWITZ.* *Albany Med. Coll. and VA Hosp.*

2:15 **910.** Kinetics of adenine-C^{14} incorporation into normal and poliovirus infected HeLa-S3 cells. UDAI N. SINGH,* RAY KOPPELMAN* AND E. A. EVANS, JR. *Univ. of Chicago.*

2:30 **911.** Ribonucleic acids of amphibian eggs. F. J. FINAMORE AND E. VOLKIN. *Oak Ridge Natl. Lab.*

2:45 **912.** Temporal and quantitative aspects of DNA and RNA synthesis in synchronously dividing cells of early cleavage stage sea-urchin embryos. MARTIN NEMER.* *Inst. for Cancer Res.*

3:00 **913.** Resemblance of bacterial RNA and DNA. L. ASTRACHAN AND THELMA N. FISHER.* *Oak Ridge Natl. Lab.*

3:15 **914.** Synthesis of different molecular species of RNA. B. D. HALL,* R. STORCK* AND S. SPIEGELMAN. *Univ. of Illinois.*

3:30 **915.** Formation of specific ribonucleic acids during the development of chloroplasts. GEORGE BRAWERMAN, A. O. POGO* AND ERWIN CHARGAFF. *Columbia Univ.*

3:45 **916.** Reversible inhibition of DNA synthesis by heavy water. PAUL R. GROSS AND CLIFFORD V. HARDING.* *New York Univ. and Columbia Univ.*

4:00 **917.** Tritium decay effects in *E. coli*. MARTIN RACHMELER.* *Univ. of California.*

4:15 **918.** Changes in amount and composition of liver nucleic acids in ethionine-fed rats. U. MODY,* J. PERRY* AND J. A. STEKOL. *Inst. for Cancer Research.*

91. Enzymes III

TUES. P.M.—CONVENTION HALL, ROOM G

Chairman: S. Velick

1:30 **919.** Stabilizing effect of protein on pancreas deoxyribonuclease. ROBERT N. FEINSTEIN. *Argonne Natl. Lab.*

1:45 **920.** A proteolytic enzyme inhibitor from sheep serum. CHARLES J. MARTIN.* *Univ. of Pittsburgh.*

2:00 **921.** Protection of aldolase from proteolytic digestion by diphosphates. ALAN H. MEHLER AND T. VISWANATHA. *Natl. Insts. of Health.*

2:15 **922.** Stabilization of α-glycerophosphate dehydrogenase by reduced DPN. CARL E. SHONK.* *Merck Inst. for Therap. Res.*

2:30 **923.** Substrate induced enzyme inactivation at physiological conditions. D. TUCKER* AND S. GRISOLIA. *Univ. of Kansas Med. Ctr.*

2:45 **924.** A comparison of esterolytic activity of 3-phosphoglyceraldehyde dehydrogenase from yeast and muscle. J. H. PARK, E. L. TAYLOR,* B. P. MERIWETHER,* AND L. W. CUNNINGHAM. *Vanderbilt Univ. Med. Sch.*

3:00 **925.** Tentative evidence of partial activity of inactive transketolase. RALPH C. CORLEY AND JAMES L. RHOADES.* *Purdue Univ.*

3:15 **926.** Carboxymethylation of yeast enolase. J. M. BRAKE* AND F. WOLD.* *Univ. of Illinois.*

3:30 **927.** Iodoacetic acid and iodoacetamide reactions in relation to action of phosphoglucomutase. JOHN A. YANKEELOV, JR.* AND D. E. KOSHLAND, JR. *Brookhaven Natl. Lab.*

3:45 **928.** Reaction of N-ethylmaleimide with sweet potato β-amylase. JOHN C. SPECK, JR.,* JOHN P. RIEHM* AND RENE EVARD.* *Michigan State Univ.*

92. Protein Chemistry II

TUES. P.M.—AMBASSADOR, RENAISSANCE ROOM

Chairman: H. K. Schachman

1:30 **929.** Specific interactions between proteins. RAYMOND M. SHIRVEN, MICHAEL L. INGERMAN AND HERBERT JEHLE. *George Washington Univ.*

1:45 **930.** Structural requirements for protein denaturation. JULIUS GORDON* AND W. P. JENCKS. *Brandeis Univ.*

2:00 **931.** Internal rigidity of thyroglobulin. R. F. STEINER* AND H. EDELHOCH. *Naval Med. Res. Inst. and Natl. Insts. of Health.*

2:15 **932.** Behavior of hydrogen bonds in urea solutions. MILTON LEVY AND JOHN MAGOULAS.* *New York Univ. Coll. of Dent.*

2:30 **933.** Ribonuclease in urea. E. A. BARNARD.* *Univ. of California, and King's Coll.*

2:45 **934.** Effect of urea and other denaturing agents on alcohol dehydrogenase from horse liver and yeast. L. BRAND,* J. EVERSE,* S. BARGMANN* AND N. O. KAPLAN. *Brandeis Univ.*

3:00 **935.** Effect of alkaline pH and urea on muscle proteins. A. STRACHER.* *State Univ. of New York Coll. of Med.*

3:15 **936.** Progress in rack mechanisms for heme-proteins. RUFUS LUMRY, HIROYUKI MATSUMIYA* AND ERIC MOORE.* *Univ. of Minnesota.*

3:30 **937.** Sub-units of proteins. A. RAMEL,* E. STELLWAGEN* AND H. K. SCHACHMAN. *Univ. of California.*

3:45 **938.** Effects of thiolation on enzymatic activity of ribonuclease. F. H. WHITE, JR.* *Natl. Insts. of Health.*

4:00 **939.** Interactions governing formation of the unique structure of ribonuclease from the reduced chain. E. HABER,* M. SELA* AND C. B. ANFINSEN. *Natl. Insts. of Health.*

93. Lipid Metabolism II

TUES. P.M.—AMBASSADOR, VENETIAN ROOM

Chairman: E. H. Stotz

1:30 **940.** Lipid peroxide formation in rat brain homogenates. ALBERT A. BARBER.* *Univ. of California.*

1:45 **941.** Chemical maturation of rat brain. J. F. GREANEY.* *McLean Hosp. Research Lab.*

2:00 **942.** Lipids and fatty acids in degenerating nerve. WILLIAM H. CEVALLOS* AND JAMES F. BERRY. *Sinai Hosp. and Johns Hopkins Sch. of Med.*

2:15 **943.** Incorporation of radioactive precursors into lipids of rat heart and liver homogenates. G. V. MARINETTI, T. SMITH* AND M. GRIFFITH.* *Univ. of Rochester Med. Sch.*

2:30 **944.** Control of triglyceride synthesis by nucleic acid derivatives. W. A. CREASEY,* L. HANKIN* AND R. E. HANDSCHUMACHER.* *Yale Univ. Sch. of Med. and Connecticut Agric. Exp. Station.*

2:45 **945.** Localization of palmitate-C-14 incorporation into phospholipid fractions by excised rat diaphragm in vitro. M. COLODZIN,* E. M. NEPTUNE, H. C. SUDDUTH* AND D. A. KEMNITZ.* *Naval Med. Res. Inst.*

3:00 **946.** In vitro incorporation of palmitate-1-C^{14} into neutral lipid of rat diaphragm. E. M. NEPTUNE, JR., J. J. REISH, JR.* AND H. C. SUDDUTH.* *Naval Med. Res. Inst.*

3:15 **947.** Selective in vivo labeling of epididymal fat with 1-C^{14}-fatty acids. Y. STEIN* AND O. STEIN.* *Rockefeller Inst.*

3:30 **948.** Regulation of hepatic fatty acid oxidation. JOSEPH A. ONTKO.* *Univ. of Tennessee Med. Units.*

3:45 **949.** Fatty acids of liver and adipose lipids during cerium-induced fatty liver infiltration. FRED SNYDER,* N. STEPHENS* AND G. C. KYKER. *Oak Ridge Inst. of Nuclear Studies.*

4:00 **950.** Mobilization and removal of individual free fatty acids in dogs. HARVEY I. MILLER,* MARTIN GOLD* AND JOHN J. SPITZER.* *Hahnemann Med. Coll.*

4:15 **951.** Fat deposition and fat biogenesis in the human aorta. JOSEPH L. RABINOWITZ. *VA Hosp. and Univ. of Pennsylvania.*

94. Purine Metabolism

TUES. P.M.—AMBASSADOR, SURF ROOM

Chairman: J. M. Buchanan

1:30 **952.** Formation of purines under possible primitive earth conditions. J. ORÓ. *Univ. of Houston.*

1:45 **953.** A convenient procedure for synthesis and phosphorylation of isopropylidene ribonucleosides. ALEXANDER HAMPTON.* *Sloan-Kettering Inst.*

2:00 **954.** Biosynthesis of caffein. LOUISE ANDERSON.* *Cornell Univ.*

2:15 **955.** Metabolism of 4-amino-5-imidazole carboxamide by germinating wheat embryos. LOUIS SHUSTER. *Tufts Univ. Sch. of Med.*

2:30 **956.** Method for determination of partition of adenine-C^{14} nucleotides in complex reaction systems. R. W. VON KORFF. *Univ. of Minnesota.*

2:45 **957.** Compounds of adenosine triphosphate with ferric iron. CHARLES R. GOUCHER* AND J. F. TAYLOR. *Univ. of Louisville Sch. of Med.*

3:00 **958.** Adenosine myonic acid dinucleotide (AMD), a newly isolated nucleotide from rabbit muscle. D. P. DE CAPUTTO,* W. H. MOSLEY,* L. POYER* AND R. CAPUTTO. *Oklahoma Med. Res. Inst., Univ. of Oklahoma Sch. of Med.*

3:15 **959.** A 6-oxypurine nucleoside triphosphate-AMP-transphosphorylase from swine liver. M. CHIGA* AND G. W. E. PLAUT. *Univ. of Utah Coll. of Med.*

3:30 **960.** Xanthylic pyrophosphorylase of *Salmonella typhimurium*. G. P. KALLE* AND J. S. GOTS. *Univ. of Pennsylvania.*

3:45 **961.** Mechanisms of therapeutic synergy by combinations of azaserine and purine analogs. ALAN C. SARTORELLI* AND BARBARA A. BOOTH.* *Samuel Roberts Noble Fndn.*

4:00 **962.** A metabolic product of 6-propylthiopurine in man. GERTRUDE B. ELION. *Wellcome Research Labs.*

Biochemistry Society Business Meeting

TUESDAY, 4:30 P.M.—CONVENTION HALL, ROOM H

Biochemistry Society Coffee Lounge

Monday through Friday, 8:30 A.M.–5:00 P.M., Convention Hall, Room C

Pharmacology Society Sessions—Tuesday, 9:00 a.m.

95. Cardiovascular Pharmacology III

TUES. A.M.—DENNIS, BORTON HALL

Chairman: McK. Cattell

9:00 **963.** Spectrofluorometric assay of cardiotonic steroids. B. G. KATZUNG,* D. WELLS* AND F. H. MEYERS. *Univ. of California Med. Ctr.*

9:15 **964.** Effect of Digoxin pretreatment on heart contractile force during thiopental infusion. A. H. GOLDBERG,* H. M. MALING AND T. E. GAFFNEY.* *Natl. Insts. of Health.*

9:30 **965.** Electrical and mechanical action of 5-hydroxytryptamine, epinephrine, ouabain and procainamide on strips of turtle ventricle. A. STUART HANSON* AND THOMAS A. MAGILL.* *Dartmouth Med. Sch.*

9:45 **966.** Possible relation of potassium to increased tolerance to digitalis during hypothermia in dogs. J. R. TUREMAN* AND W. M. BOOKER. *Howard Univ.*

10:00 **967.** Effect of vagotomy on digitoxin bradycardia in frogs. T. F. REDICK,* P. L. MCLAIN, R. E. BOHL* AND R. E. KEENAN.* *Univ. of Pittsburgh.*

10:15 **968.** Norepinephrine-induced cardiac depression in digitalized hypothermic dog heart muscle. JOANNE I. MOORE* AND MARION DEV. COTTEN. *Emory Univ.*

10:30 **969.** Mechanism of cardiac arrhythmias produced by electrical stimulation of the hypothalamus. J. W. MANNING,* W. N. KELLEY,* C. E. JOHNSON* AND M. DEV. COTTEN. *Emory Univ.*

10:45 **970.** Response of in vitro cardiac preparations following d,l-aldosterone and spirolactone. RALPH D. TANZ.* *Western Reserve Univ.*

11:00 **971.** Drug effects on hypothermic ventricular fibrillation in several dogs simultaneously. R. H. WHEELOCK,* C. V. WINDER AND W. GALBREATH.* *Parke, Davis.*

11:15 **972.** Drug-induced changes in ventricular "echo." HENRY H. SWAIN, BARRY A. SHAPIRO* AND KIRO SHIMAMOTO.* *Univ. of Michigan.*

11:30 **973.** Cardiovascular responses to ergometrine and hypoxia in normal and fat-fed rabbits. D. R. VARMA* AND K. I MELVILLE. *McGill Univ.*

96. Anesthetics

TUES. A.M.—DENNIS, CRYSTAL BALLROOM

Chairman: E. M. Boyd

9:00 **974.** Mode of action of local anesthetics. J. M. RITCHIE AND P. GREENGARD.* *Albert Einstein Coll. of Med.*

9:15 **975.** Regional anesthesia of the CNS. PETER H. BULLE, LAWRENCE M. PETRUCELLI* AND MAHMOUD OSKOUI.* *Georgetown Univ.*

9:30 **976.** Laboratory and clinical studies with 1,1,2-trifluoro-2-bromo ethyl methyl ether (DA-893). ALAN VAN POZNAK* AND JOSEPH F. ARTUSIO, JR. *New York Hosp. and Cornell Med. Coll.*

9:45 **977.** Laboratory and clinical investigation of teflurane (DA-708), 1,1,1,2-tetrafluoro-2-bromoethane. J. F. ARTUSIO, JR. AND A. VAN POZNAK.* *New York Hosp. and Cornell Univ. Med. Coll.*

10:00 **978.** Intravenous anesthetic emulsions in animals and man. HELMUT F. CASCORBI* AND JOHN C. KRANTZ, JR. *Univ. of Maryland.*

10:15 **979.** Influence of methoxyflurane upon the cardiovascular response to epinephrine. WILLIAM C. NORTH AND PAUL R. KNOX.* *Duke Univ.*

10:30 **980.** Cardiovascular effects of methoxyflurane. ERVINE E. BAGWELL* AND EUGENE F. WOODS. *Med. Coll. of South Carolina.*

10:45 **981.** Effects of halothane anesthesia upon ventricular function curves in the dog. TSUNG-HAN LI, SHIRO SHIMOSATO* AND BENJAMIN ETSTEN. *Tufts Univ. and New England Ctr. Hosp.*

11:00 **982.** Ventricular tachycardia produced by metaraminol during cyclopropane anesthesia in dogs. R. KRAEMER,* K. L. SIEBECKER,* B. J. BAMFORTH* AND O. S. ORTH. *Univ. of Wisconsin.*

11:15 **983.** Lack of increase in brain 5HT content of rats given barbiturates. G. L. GESSA* AND E. COSTA. *Natl. Insts. of Health.*

97. Drug Metabolism I

TUES. A.M.—DENNIS, GARDEN LOUNGE

Chairman: P. S. Larson

9:00 **984.** Effects of corn oil, heparin and albumin on thiopental distribution. WALLACE D. WINTERS. *UCLA.*

9:15 **985.** In vitro inactivation of mitomycin C, an antitumor antibiotic. HERBERT S. SCHWARTZ.* *Sloan-Kettering Inst. for Cancer Res.*

9:30 **986.** A fluorometric procedure for determining phenylalanine mustard in biological tissues. MICHAEL A. CHIRIGOS* AND ABRAHAM GOLDIN. *Natl. Cancer Inst.*

9:45 **987.** Metabolism and tissue distribution of radioisotopically labeled demethylchlortetracycline. R. G. KELLY,* L. A. KANEGIS* AND D. A. BUYSKE.* *Lederle Labs.*

10:00 **988.** Metabolism of safrole in the rat. JEAN M. TAYLOR* AND WILLIAM I. JONES.* *Food and Drug Admin.*

10:15 **989.** Urinary metabolites found in the rat upon administration of adrenochrome. ARTHUR SOHLER,* JOSEPH J. NOVAL,* STIRLING STACKHOUSE* AND ALBERT BRYAN.* *Bureau of Res. in Neurology and Psychiatry.*

10:30 **990.** Metabolism of 1-methyl-2-formylpyridinium iodide oxime-1-C^{14} in the isolated perfused rat liver. J. LEONG WAY. *Univ. of Wisconsin.*

10:45 **991.** Enzymatic transformation of 1-methyl-2-formylpyridinium iodide oxime. HOWARD TONG,* PAUL MASTERSON* AND J. LEONG WAY. *Univ. of Wisconsin.*

11:00 **992.** Oxidation of nicotine-C-14 and nicotine-methyl-C-14 in vivo. LENNOX B. TURNBULL,* EINOSUKE WADA,* EDWARD R. BOWMAN* AND HERBERT MCKENNIS, JR. *Med. Coll. of Virginia.*

11:15 **993.** Metabolism of amitriptyline. H. B. HUCKER AND C. C. PORTER. *Merck Inst. for Therap. Res.*

Pharmacology Society Sessions—Tuesday, 1:30 p.m.

98. Cardiovascular Pharmacology IV

TUES. P.M.—DENNIS, BORTON HALL

Chairman: J. B. Kahn, Jr.

1:30 **994.** Ion fluxes in vascular smooth muscle. ARTHUR H. BRIGGS.* *Univ. of Mississippi.*

1:45 **995.** Na^{24} entry in isolated rabbit atria. P. P. CERVONI* AND W. C. HOLLAND. *Univ. of Mississippi.*

2:00 **996.** Direct measurement of uptake and outgo of potassium^{42} in the dog heart: effect of heart rate, coronary flow and 3-acetyl-strophanthidin. G. GRUPP. *Univ. of Cincinnati.*

2:15 **997.** Effects of ouabain, hypothermia and anoxia on cation fluxes in embryonic chick heart. RICHARD L. KLEIN.* *Univ. of Mississippi.*

2:30 **998.** Influence of K and Ca on effect of ouabain. D. H. YU,* R. BURSTEIN* AND K. S. LEE. *State Univ. Coll. of Med. at Brooklyn.*

2:45 **999.** Effect of ouabain on glycerol-extracted heart muscle fibers. K. S. LEE. *State Univ. Coll. of Med. at Brooklyn.*

3:00 **1000.** Effect of autonomic nervous system on cardiac phosphorylase in open-chest rat preparations. MARILYN E. HESS, JOSEPH SHANFELD* AND NIELS HAUGAARD. *Univ. of Pennsylvania.*

3:15 **1001.** An early cardiovascular response to intravenous administration of insulin. SANTIAGO A. PEREDA,* JOHN W. ECKSTEIN* AND FRANCOIS M. ABBOUD.* *State Univ. of Iowa.*

3:30 **1002.** Thiopental arrest and spontaneous recovery of isolated rabbit heart. ROBERT L. RUSSELL* AND MARVIN L. ZATZMAN.* *Univ. of Missouri.*

3:45 **1003.** Afferent pathways of active reflex dilatation. M. J. BRODY* AND L. BECK.* *Univ. of Michigan.*

4:00 **1004.** Ventricular function curves in nonanesthetized dogs: effect of open pneumothorax. SHIRO SHIMOSATO,* TSUNG-HAN LI AND BENJAMIN ETSTEN. *Tufts Univ. and New England Ctr. Hosp.*

4:15 **1005.** Formation of pneumatic systole with the Bird ventilator. M. A. KILMORE,* F. BIRD* AND H. F. CHASE. *Jefferson Med. Coll.*

99. Analgesics I

TUES. P.M.—DENNIS, CRYSTAL BALLROOM

Chairman: N. A. David

1:30 **1006.** Lawfulness of clinical pain. LOUIS LASAGNA. *Johns Hopkins Sch. of Med.*

1:45 **1007.** Pharmacologic potency of heroin, MAM and morphine. W. L. WAY* AND E. LEONG WAY. *Univ. of California Med. Ctr.*

2:00 **1008.** A clinical and laboratory study of hydroxydihydromorphinone (Numorphan HCl). THOMAS J. DEKORNFELD.* *Baltimore City Hosps.*

2:15 **1009.** Relative potency and effectiveness of codeine and morphine. S. L. WALLENSTEIN,* R. W. HOUDE AND J. W. BELLVILLE. *Sloan-Kettering Inst.*

2:30 **1010.** Pharmacology of 2-amino-indane (SU-8629), a potent, non-narcotic analgesic. L. B. WITKIN,* C. F. HUEBNER,* F. GALDI,* E. O'KEEFE,* P. SPITALETTA* AND A. J. PLUMMER. *Ciba Pharmaceut. Products.*

2:45 **1011.** Analgetic activity of 1,2-dimethyl-3-phenyl-3-pyrrolidyl propionate hydrochloride (Prodilidine HCl). J. W. KISSEL* AND J. R. ALBERT.* *Mead Johnson.*

3:00 **1012.** 1,2-Dimethyl-3-phenyl-3-propionoxypyrrolidine (Cl-427), an analgetic agent. C. V. WINDER, J. WAX,* B. SERRANO,* L. SCOTTI,* S. P. STACKHOUSE* AND R. H. WHEELOCK.* *Parke, Davis.*

3:15 **1013.** Analgesic activity of N-(2-dimethylaminoethyl)-2-ethoxy-N-methyl-2,2-diphenylacetamide. G. L. HASSERT, JR.,* J. J. PIALA,* J. C. BURKE AND B. N. CRAVER. *Squibb Inst. for Med. Res.*

3:30 **1014.** Clinical study of a new analgesic, Ro 4-1778/1. M. J. SCHIFFRIN, MAX S. SADOVE* AND DAVID L. BRUCE.* *Univ. of Illinois.* (Physiol.)

3:45 **1015.** Effect of pH alterations on gastric absorption of salicylates. ANN M. MORGAN* AND EDWARD B. TRUITT, JR. *Univ. of Maryland.*

4:00 **1016.** Relation of salicylate protein-binding with abnormal electrophoretic patterns. ROBERT C. BATTERMAN, ARTHUR KARLER,* IRVING WARNER* AND GEORGE J. MOURATOFF.* *Inst. for Clin. Pharmacology & Med. Res.*

100. Toxicology I

TUES. P.M.—DENNIS, ST. DENIS ROOM

Chairman: J. M. Coon

1:30 **1017. INTRODUCTORY REMARKS.** J. M. COON. *Jefferson Med. Coll.*

2:00 **1018.** Acute oral toxicity and potentiation studies with anticholinesterase compounds. ERNEST C. HAGAN,* PAUL M. JENNER* AND O. GARTH FITZHUGH. *Food and Drug Admin.*

2:15 **1019.** Effects of organic phosphates delnav and malathion in the dog. VIRGINIA L. ZARATZIAN,* LOUISE T. ARNAULT,* THEODORE C. MICHEL* AND O. GARTH FITZHUGH. *Food and Drug Admin.*

2:30 **1020.** Effects of ethyl p-nitrophenyl benzene thionophosphonate (EPN) on toxicity of isopropyl methyl phosphonofluoridate (Sarin, GB). J. H. FLEISHER* AND A. B. FAYTOL.* *U.S. Army Chem. Res. & Devel. Labs.*

2:45 **1021.** Mechanism of interaction between thiophosphonate anticholinesterases. O. AWAD* AND ALEXANDER G. KARCZMAR. *Loyola Univ.*

3:00 **1022.** Mechanism of toxicity and of potentiation of toxicity arising from combined administration of thiophosphonates. ALEXANDER G. KARCZMAR AND O. AWAD.* *Loyola Univ.*

3:15 **1023.** Anticholinesterase effect of parathion and methyl parathion in humans. HUGO C. MOELLER* AND J. ALFRED RIDER. *Univ. of California Med. Ctr.*

3:30 **1024.** An alternate procedure for determining toxicity of cholinesterase inhibitors. D. C. JESSUP* AND F. C. LU. *Dept. of Natl. Health and Welfare, Ottawa.*

3:45 **1025.** Acute oral and intraperitoneal toxicity of rare earth compounds. B. E. HIETBRINK,* D. W. BRUCE* AND K. P. DUBOIS. *Univ. of Chicago.*

4:00 **1026.** Assessment of liver function in mice with brom-

sulfalein (BSP). S. DAVID KUTOB* AND GABRIEL L. PLAA.* *Tulane Univ.*

101. Drug Metabolism II

TUES. P.M.—DENNIS, GARDEN LOUNGE

Chairman: L. J. Roth

1:30 **1027.** Separation of active fractions of liver by electrochromatography. ARTHUR KARLER,* NICHOLAS V. CARROLL* AND ROBERT C. BATTERMAN. *Inst. for Clin. Pharmacol. and Med. Res.*

1:45 **1028.** Determination of tritium and C^{14} in biological samples by rapid combustion techniques. D. BUYSKE,* E. PEETS,* J. FLORINI,* S. GORDON* AND R. KELLY.* *Lederle Labs. Div.*

2:00 **1029.** Application of the Schöniger combustion method to determination of selenium in tissue and biological fluids. H. H. TAUSSKY,* J. V. COMUNALE,* A. WASHINGTON* AND A. T. MILHORAT. *Inst. for Muscle Disease.*

2:15 **1030.** Metabolic fate of arsenic acid in dairy cows. S. A. PEOPLES. *Univ. of California.*

2:30 **1031.** Zn^{65} excretion in man and effect of chelating agents thereon. A. M. FELDSTEIN,* B. ROSOFF,* K. SULLIVAN* AND H. SPENCER.* *Montefiore Hosp.*

2:45 **1032.** Excretion and distribution of Sc^{46} in man and its removal by chelating agents. B. ROSOFF,* A. FELDSTEIN,* E. STEVENS* AND H. SPENCER.* *Montefiore Hosp.* (Immunol.)

3:00 **1033.** Induction of alcohol oxidation by intact mammalian erythrocytes. T. R. TEPHLY,* G. J. MANNERING AND R. E. PARKS, JR. *Univ. of Wisconsin.*

3:15 **1034.** Potent stimulatory effect of 3-methylcholanthrene on ascorbic acid synthesis in rats. P. G. DAYTON,* A. H. CONNEY,* J. M. PEREL,* P. BLABER* AND J. J. BURNS. *Goldwater Mem. Hosp., Wellcome Res. Labs. and Natl. Heart Inst.*

3:30 **1035.** Components involved in the potentiating action of beta-phenylisopropylhydrazine (PIH) on hexobarbital action. DAVID M. SERRONE* AND JAMES M. FUJIMOTO. *Tulane Univ.*

3:45 **1036.** Adaptive increases in metabolism of hexobarbital induced by certain inhibitors. JAMES M. FUJIMOTO AND DAVID M. SERRONE.* *Tulane Univ.*

4:00 **1037.** An unusual cholinesterase. WALTER M. FITCH.* *Stanford Univ.*

Pharmacology Society Business Meeting

TUESDAY, 4:30 P.M.—DENNIS, BORTON HALL

Placement Service
Main Arena Floor, Convention Hall

Lost and Found
Federation Office, Room 8, Convention Hall

Pharmacology Society Coffee Lounge
Monday through Friday, 8:30 A.M.–5:00 P.M., Dennis, Playroom

Pathology Society Sessions—Tuesday, 9:00 a.m.

102. Tissue Response II

TUES. A.M.—RITZ-CARLTON, BALLROOM

Chairmen: J. J. Lalich; H. A. Hartmann

9:00 **1038.** Serum proteins and glycoproteins in experimental scurvy and in carrageenan granuloma. PAOLO MOMBELLONI,* CONRAD L. PIRANI AND HUBERT R. CATCHPOLE. *Univ. of Illinois.*

9:15 **1039.** Effects of "toxic fat" on spermatogenesis. J. R. ALLEN.* *Univ. of Wisconsin.*

9:30 **1040.** Protective effect of parasympatheticomimetic agents on respiratory epithelium exposed to irritant aerosols. PAUL KOTIN, HANS L. FALK* AND HERTA M. TREMER.* *Univ. of Southern California.*

9:45 **1041.** Experimental induction of tubercles in rats with pine pollen. A. LINDNER, R. NAIK,* T. KUTKAM,* J. SOKATCH* AND J. HAMMARSTEN.* *VA Hosp. and Univ. of Oklahoma.*

10:00 **1042.** Pathologic changes associated with B-2-thienyl-dl-alanine administration. NATHAN KAUFMAN, THOMAS D. KINNEY AND JANIS V. KLAVINS.* *Duke Univ.*

10:15 **1043.** Pulmonary arteritis produced in rats by feeding *Crotalaria spectabilis.* JOSEPH J. LALICH AND LEONARD P. MERKOW.* *Univ. of Wisconsin.*

10:30 **1044.** A comparative study of scurvy and osteolathyrism in guinea pigs J. J. CLEMMONS. *Western Reserve Univ.*

10:45 **1045.** Paralysis and cord injury in rats fed β-aminopropionitrile. H. A. HARTMANN AND J. J. LALICH. *Univ. of Wisconsin.*

11:00 **1046.** Shrinkage temperature of collagen in lathyritic rats. R. BRUNS* AND M. L. WATSON.* *Univ. of Rochester.*

11:15 **1047.** Tumor growths in lathyritic rats. CEDRIC MCCRARY,* YASUYUKI AKAMATSU* AND J. L. ORBISON. *Univ. of Rochester.*

11:30 **1048.** Developmental neuropathology of genetic mutant mouse, "paralytic." RICHARD E. COGGESHALL,* CONSTANCE J. D'AMATO,* MAUREEN A. BRODBINE* AND SAMUEL P. HICKS. *Harvard Med. Sch. and New England Deaconess Hosp.*

103. Liver II

TUES. A.M.—RITZ-CARLTON, CARLTON ROOM

Chairmen: T. D. Kinney; N. Kaufman

9:00 **1049.** Bindings of sera of patients with hepatic diseases to liver constituents. FIORENZO PARONETTO,* FENTON SCHAFFNER AND HANS POPPER. *Mt. Sinai Hosp., New York.*

9:15 **1050.** Lesions of guinea pig liver and other organs produced by liver homogenate and Freund's adjuvant. S. A. NORKIN,* L. S. GOTTLIEB AND N. ZAMCHECK. *Boston City Hosp.*

9:30 **1051.** Graded depression of liver catalase activity in mice. EDWIN T. NISHIMURA, SIDNEY ROSENHEIM* AND LARRY KLEIN.* *Northwestern Univ.*

9:45 **1052.** Quantitation of cortisone effect on hepatic fibrosis. EMANUEL RUBIN* AND FERENC HUTTERER.* *Mt. Sinai Hosp., New York.*

10:00 **1053.** Liver tumors produced in rats by feeding safrole. ELEANOR L. LONG,* WALTER H. HANSEN* AND ARTHUR A. NELSON. *Food and Drug Admin.*

10:15 **1054.** 4 Allyl-1,2 methylenedioxybenzene (safrole) as a new tool for the study of pathogenesis of toxic hepatic cirrhosis and adenomatosis. F. HOMBURGER, G. FRIEDLER,* T. KELLEY, JR.* AND A. B. RUSSFIELD. *Bio-Research Inst.*

10:30 **1055.** Absorption of intrinsic factor by isolated perfused rat liver. MILTON TOPOREK.* *Jefferson Med. Coll.*

10:45 **1056.** Ductular cells and bile formation. EDWARD J. SINGER,* TIBOR BARKA* AND STANLEY GOLDFARB.* *Mt. Sinai Hosp., New York.*

11:00 **1057.** Experimental cholangitis as a cause of intrahepatic cholestasis. STANLEY GOLDFARB,* EDWARD J. SINGER* AND TIBOR BARKA.* *Mt. Sinai Hosp., New York.*

11:15 **1058.** Biliary cholesterol deposits in ground squirrels and prairie dogs. D. E. PATTON,* K. PLOTNER,* G. E. COX* AND C. B. TAYLOR. *Evanston Hosp. and Northwestern Univ.*

11:30 **1059.** Xanthine oxidase activity and iron storage in liver. JANIS V. KLAVINS,* THOMAS D. KINNEY AND NATHAN KAUFMAN. *Duke Univ.*

11:45 **1060.** Effect of inflammation on iron from transfused nonviable erythrocytes. M. R. QUASTEL * J. F. ROSS AND B. DIETER.* *UCLA.*

12:30 P.M. Films of Interest to Pathologists—See page 470.

Pathology Society Sessions—Tuesday, 1:30 p.m.

104. Hematology I

TUES. P.M.—RITZ-CARLTON, BALLROOM

Chairmen: E. D. Warner; R. D. Langdell

1:30 **1061.** The spleen in induced regression of and resistance to Murphy-Sturm leukemia. CLAUDE R. THOMAS* AND RUSSELL S. JONES. *Univ. of Utah.*

1:45 **1062.** Mechanism of hemocytopoiesis: platelet regulation, normal and in leukemia. BERNHARD STEINBERG, FRANK H. CHENG* AND RUTH A. MARTIN.* *Toledo Hosp.*

2:00 **1063.** A hypothesis of lympho- and myelopoiesis based on observations of living human cells. ROBERT SCHREK. *VA Hosp., Hines, Illinois.*

2:15 **1064.** Effects of litter size and hormones on cellular relationships of the marrow of suckling rats. CHARLES HARRIS AND W. T. BURKE.* *Temple Univ.*

2:30 **1065.** Effect of pyruvate on metabolism of inosine by erythrocytes. T. J. MCMANUS* AND T. A. BORGESE.* *Harvard Med. Sch.*

2:45 **1066.** Anemia in the rat produced by methyl cellulose. DONALD A. ROWLEY, FRANK W. FITCH AND INGER BYE.* *Univ. of Chicago.*

3:00 **1067.** Positive direct Coombs' test in trypan blue in-

duced hemolytic anemia. DAVID V. BROWN AND LORNA M. NORLIND.* *VA Hosp. and Univ. of Washington.*

3:15 **1068.** Comparative studies on reactions of rabbit antiguinea pig erythrocyte serum. CHANG LING LEE,* ISRAEL DAVIDSOHN AND OLGA PANCZYSZYN.* *Chicago Med. Sch. and Mt. Sinai Hosp.*

3:30 **1069.** Erythrocyte survival in the tumor-bearing hamster utilizing in vivo chromation. P. E. RIGBY,* C. P. EMERSON* AND G. H. FRIEDELL.* *Massachusetts Mem. Hosp. and Boston Univ.*

3:45 **1070.** Mechanism of anemia in malignancy. ROY KORSON. *Univ. of Vermont.*

4:00 **1071.** Effect of neonatal transfusions on survival of homologous erythrocytes in chickens J. S. WELLINGTON,* R. E. GARDNER* AND J. P. MCGINLEY.* *Univ. of California.*

4:15 **1072.** Reclassification of idiopathic into symptomatic hemolytic anemia. KARL L. ROTH.* *Albert Einstein Med. Ctr.*

105. Neoplasia I

TUES. P.M.—RITZ-CARLTON, CARLTON ROOM

Chairmen: H. L. Stewart; A. S. Rabson

1:30 **1073.** Blood group antigen distribution in breast lesions. M. TELLEM,* H. R. PLOTKIN* AND D. R. MERANZE.* *Albert Einstein Med. Ctr.*

1:45 **1074.** Carcinogenic activity of nucleic acid extracts from neoplastic cells. GLENN J. DIXON,* BETTIE A. DUNCAN* AND F. M. SCHABEL, JR. *Southern Res. Inst.*

2:00 **1075.** Toxic effect of some tumor nucleoprotein fractions upon fibroblasts. ALBERT G. SMITH. *Duke Univ.*

2:15 **1076.** Hepatomagenesis in rainbow trout. LAURENCE M. ASHLEY* AND JOHN E. HALVER. *Western Fish Nutrition Lab.* (Physiol.)

2:30 **1077.** Effect of heparin and heparin-antagonist on the development of experimental carcinomas in mice. M. R. DUNN* AND S. A. JONSSON.* *Woman's Med. Coll.*

2:45 **1078.** Factors influencing tumor development in transplants of methylcholanthrene-treated skin of mice. CHARLES A. ASHLEY. *Mary Imogene Bassett Hosp.*

3:00 **1079.** Neoplasms of the urinary bladder and liver in rats fed 2-acetylaminofluorene and indole. R. OYASU,* D. MILLER,* J. MCDONALD* AND G. HASS. *Presbyterian-St. Luke's Hosp.*

3:15 **1080.** Influence of oxygen concentration on formation of lung tumors by transplacental exposure to urethan. JOSEPH A. DIPAOLO.* *Roswell Park Mem. Inst.*

3:30 **1081.** Effect of electrical shock stress on transplanted tumors in mice. ROBERT D. ABRAMS,* ROBERT HUEBSCH* AND LORIN RAIKEN.* *Waldemar Med. Res. Fndn.*

3:45 **1082.** Proposed chemotherapeutic management of the inoperable pulmonary lesion. I. W. D. HENDERSON.* *Harvard Med. Sch. and Children's Cancer Res. Fndn.*

Pathology Society Business Meeting

TUESDAY, 4:30 P.M.—RITZ-CARLTON, BALLROOM

Motion Pictures

Motion pictures will be run continuously for three days, Tuesday through Thursday, 9:00 A.M.–5:00 P.M., Room D, Main Arena Floor, Convention Hall.

Press Room: Room 9, Convention Hall

Tickets

Tickets for group breakfasts, luncheons and dinners; Society dinners, Smokers and Mixers; and other Federation functions will be on sale in the registration area, Lobby, Convention Hall.

Hours: Sunday, 12:00 noon to 11:00 P.M.; Monday through Thursday, 8:00 A.M. to 5:00 P.M.

Nutrition Society Sessions—Tuesday, 9:00 a.m.

106. Clinical Nutrition Studies

TUES. A.M.—AMBASSADOR, "22" CLUB

Chairmen: W. A. Krehl; R. Goodhart

9:00 **1083.** Liver composition in kwashiorkor and marasmus. JOSÉ MÉNDEZ AND CARLOS TEJADA.* *Inst. of Nutrition of Central America and Panama.*

9:15 **1084.** Vitamin A transport in severe protein malnutrition. GUILLERMO ARROYAVE, DOROTHY WILSON,* HÉCTOR CASTELLANOS* AND NEVIN S. SCRIMSHAW. *Inst. of Nutrition of Central America and Panama.*

9:30 **1085.** Effects of rice enrichment on nutritional status of Chinese Armed Forces on Taiwan. I. C. PLOUGH, C. F. CONSOLAZIO AND S. N. GERSHOFF. *U.S. Army Trop. Res. Med. Lab., U.S. Army Med Res. and Nutr. Lab. and Harvard Univ.*

9:45 **1086.** Serum lipids of Congo Pygmies. OSWALD A. ROELS, G. V. MANN, J. MERRILL* AND MARIAN TROUT.* *Columbia Univ., Inst. pour la Recherche Scientifique en Afrique Centrale, Congo, Vanderbilt Univ. and VA Hosp.*

10:00 **1087.** Parasitism in Congo Pygmies. DONALD L. PRICE,* GEORGE V. MANN, OSWALD A. ROELS AND JOSEPH M. MERRILL.* *Walter Reed Army Inst. of Res., Columbia Univ. and Vanderbilt Univ.*

10:15 **1088.** Permeability of a butyl rubber bag to respiratory gases. CARL ALPER, ANTON SZUTKA* AND JOSEPH SEITCHIK.* *Hahnemann Med. Coll.*

10:30 **1089.** Carbon monoxide content of bank blood. ARTHUR A. ALTMAN,* FRANK A. OSKI* AND LEWIS A. BARNESS. *Hosp. of Univ. of Pennsylvania and Univ. of Pennsylvania.*

10:45 **1090.** Pre- and postpartum dietary intakes in relation to recommended allowances. A. E. HANSEN, H. F. WIESE, D. J. D. ADAM,* M. E. HAGGARD,* A. N. BOELSCHE,* H. DAVIS,* W. T. NEWSOM* AND L. PESUT.* *Univ. of Texas, Tulane Univ. and Bruce Lyon Mem. Res. Lab.*

11:00 **1091.** Absorption of amino acids and sugars from a thiry loop in man. ALINE U. ORTEN. *Wayne State Univ.*

11:15 **1092.** Personality characteristics and food intakes of obese women of two age groups compared with paired controls of normal weight. CHRISTINE WEAVER* AND WOODROW W. MORRIS.*

11:30 **1093.** Dietaries and nutritional status of adolescent Sioux Indian girls. MARGARET I. TALCOTT* AND CECILIA SCHUCK. *South Dakota State Coll.*

11:45 **1094.** Food and nutrition in Russia. F. E. DEATHERAGE. *Ohio State Univ.* (Biochem.)

107. Vitamins I: Water-Soluble

TUES. A.M.—AMBASSADOR, ROTUNDA

Chairmen: F. S. Daft; G. M. Briggs

9:00 **1095.** Niacin-tryptophane interrelationships in niacin deficiency induced by amino acid imbalance. W. N. PEARSON AND BORIBOON PHORNPHIBOUL.* *Vanderbilt Univ.*

9:15 **1096.** Factors affecting 4-pyridoxic acid excretion in human subjects. ARLETTE I. RASMUSSEN* AND MAY S. REYNOLDS. *Univ. of Wisconsin.*

9:30 **1097.** Niacin biosynthesis in Xanthomonas pruni. ROBERT G. WILSON* AND L. M. HENDERSON. *Oklahoma State Univ.*

9:45 **1098.** Effect of lime treatment of corn on availability of niacin for cats and swine. J. EDGAR BRAHAM, ABEL VILLAREAL* AND RICARDO BRESSANI. *Inst. of Nutrition of Central America and Panama.*

10:00 **1099.** Rat AAA and corticoid response to riboflavin and pyridoxine deficiency. GRANT G. SLATER.* *UCLA Med. Ctr.* (Biochem.)

10:15 **1100.** Dietary sulfur amino acids and liver coenzyme A and nonprotein sulfhydryl levels in vitamin B_6-deficient rats. M. A. WILLIAMS, B. HATA* AND I. HINCENBERGS.* *Univ. of California.*

10:30 **1101.** Biosynthesis of glutathione in B_6-deficient rats. JENG M. HSU, E. BUDDEMEYER,* J. HORMAZABAL* AND BACON F. CHOW. *VA Hosp. and Johns Hopkins Univ.*

10:45 **1102.** Riboflavin metabolism in experimental burns. CARL J. KOEHN. *Brooke Army Med. Ctr.*

11:00 **1103.** Sparing action of fat on thiamine. JAMES H. JONES AND LAKSHMI K. GOVARDHAN.* *Univ. of Pennsylvania.*

11:15 **1104.** Selective concentration of folic acid activity in cerebrospinal fluid. V. HERBERT AND R. ZALUSKY.* *Thorndike Mem. Lab., 2nd and 4th Med. Services, Boston City Hosp. and Harvard Med. Sch.* (Physiol.)

11:30 **1105.** Increased environmental temperature influences on ascorbic acid activity in the domestic fowl. PAUL A. THORNTON. *Colorado State Univ.*

11:45 **1106.** Dietary vitamin levels and response of blood citric acid concentration to stressors. C. H. HILL. *North Carolina State Coll.*

Nutrition Society Sessions—Tuesday, 1:30 p.m.

108. Lipid Metabolism—Animal

TUES. P.M.—AMBASSADOR, "22" CLUB

Chairmen: H. H. Williams; J. K. Loosli

1:30 **1107.** Fatty acid composition of tissue lipid fractions in pyridoxine deficiency. LEON SWELL, P. E. SCHOOLS, JR.* AND C. R. TREADWELL. *VA Ctr. and George Washington Univ.*

1:45 **1108.** Fatty acid composition of the lipids of chick brain mitochondria. L. A. WITTING,* B. CENTURY,* C. C. HARVEY* AND M. K. HORWITT. *Elgin State Hosp.*

2:00 **1109.** Influence of oxidation products from dietary fats on chick encephalomalacia. M. G. KOKATNUR,* V. R. BHALERAO* AND F. A. KUMMEROW. *Univ. of Illinois.*

2:15 **1110.** An essential fatty acid requirement for chickens. D. T. HOPKINS* AND M. C. NESHEIM.* *Cornell Univ.*

2:30 **1111.** Requirement of swine for dietary linoleate. EL-

DON G. HILL, RALPH T. HOLMAN AND W. O. CASTER.* *Hormel Inst. and Univ. of Minnesota.*

2:45 **1112.** Influence of high and low caloric intakes on fat deficiency in dogs. HILDA F. WIESE AND ARILD E. HANSEN. *Children's Hosp., Oakland.*

3:00 **1113.** Acute effects of feeding rats non-urea-adducting (urea-filtrate) fatty acids. LEO FRIEDMAN, GLEN M. SHUE,* CARL D. DOUGLASS AND DAVID FIRESTONE.* *Food and Drug Admin.*

3:15 **1114.** Fatty acid metabolism in liver, after starvation. A. FEIGENBAUM* AND H. FISHER. *Rutgers Univ.*

3:30 **1115.** Changes in fatty acid distribution in egg yolks caused by feeding cottonseed oil to laying hens. ROBERT JOHN EVANS, SELMA L. BANDEMER* AND J. A. DAVIDSON.* *Michigan State Univ.*

3:45 **1116.** Effect of dietary cholesterol and fat on serum and yolk cholesterol and serum glutamic-oxalacetic transaminase (GOT) in laying hens. R. E. DAVIES,* B. J. HULETT* AND J. R. COUCH. *Texas Agric. Exper. Sta.* (Biochem.)

4:00 **1117.** An apparent difference in metabolism of tritium labeled methyl oleate in chicks fed corn or coconut oil. K. S. TENNY* AND F. A. KUMMEROW. *Univ. of Illinois.*

4:15 **1118.** Effect of raw soybeans on fat digestibility in the young chick. M. C. NESHEIM,* S. BRAMBILA* AND D. T. HOPKINS.* *Cornell Univ.*

4:30 **1119.** Lipotropic activity of different liver extracts. HOWARD R. MAXWELL* AND ROBERT D. LAIRD.* *Sherman Labs.*

109. Minerals II: Metabolism

TUES. P.M.—AMBASSADOR, ROTUNDA

Chairmen: G. D. Whedon; H. Harrison

1:30 **1120.** Effects of normal food and semi-synthetic diets on urinary excretion of calcium and phosphorus. N. J. MARSHALL,* V. M. VIVIAN* AND M. B. PATTON. *Ohio Agric. Exper. Sta.*

1:45 **1121.** Phosphorus metabolism in young adult men consuming low calcium diets. G. L. BORCHERS,* B. V. MCKEY,* C. RHODES,* F. LAFONT,* H. L. CHEN* AND J. O. HOLMES. *Univ. of Illinois.*

2:00 **1122.** Adaptation of young adult males to a diet low in calcium. J. O. HOLMES, B. V. MCKEY,* H. F. JOHNSON,* D. NAVARRETE,* C. LOOMIS* AND G. L. BORCHERS.* *Univ. of Illinois.* (Biochem.)

2:15 **1123.** Formation of urinary calculi in rats. ROBERT VAN REEN. *Naval Med. Res. Inst.*

2:30 **1124.** Effect of excessive dietary phosphorus on Ca^{45} and P^{32} absorption in adult rats. C. B. AMMERMAN, J. P. FEASTER,* L. R. ARRINGTON AND G. K. DAVIS. *Univ. of Florida.*

2:45 **1125.** Effect of calcium in partial reversal of beta aminopropionitrile toxicity in the chick. EDWARD C. NABER AND UNABELLE B. BLACKWOOD.* *Ohio State Univ.*

3:00 **1126.** Effects of dietary Ca:Mg:P ratios on mineral utilization in the rat. R. M. FORBES. *Univ. of Illinois.*

3:15 **1127.** Effect of high levels of phosphorus, potassium, or phosphorus plus potassium on weanling rats fed a ration low in magnesium. BEULA V. MCKEY* AND JULIA O. HOLMES. *Univ. of Illinois.*

3:30 **1128.** Distribution of absorbed Sr^{85} and Ca^{45} as influenced by lactose. F. W. LENGEMANN AND C. L. COMAR. *New York State Vet. Coll. and Cornell Univ.*

3:45 **1129.** Metabolism of calcium, strontium and barium in lactating dairy cows. R. G. CRAGLE,* P. T. CHANDLER* AND T. H. KAMAL.* *UT-AEC Agric. Res. Lab. and Dairy Dept.*

4:00 **1130.** Ca-45 and P-32 metabolism in dairy cows with reference to plasma and milk ultrafiltrates. T. H. KAMAL* AND R. G. CRAGLE.* *UT-AEC Agric. Res. Lab.*

4:15 **1131.** Retention of strontium in egg proteins. FRANK R. MRAZ. *UT-AEC Agric. Res. Lab.*

Intersociety Symposia

See pages 459, 478, 502, 523, 544 for symposia on Effects of Hallucinogenic Drugs on Man, Gastroenterology, The Hemicholiniums, Lipid Metabolism, Use and Care of Laboratory Animals, and Viruses and Neoplasia.

Immunology Society Sessions—Tuesday, 9:00 a.m.

110. Viruses II

TUES. A.M.—SHELBURNE, GRANDE BALLROOM

Chairman: H. S. Ginsberg

9:00 **1132.** Inactivation of group B but not group A arthropod-borne animal viruses by sodium deoxycholate in plasma. J. L. HARDY* AND W. F. SCHERER. *Univ. of Minnesota.*

9:15 **1133.** Infectivity of West Nile and other viruses for rats. VIRGINIA I. BABCOCK,* DENNIS B. DORIS, JR.* AND CHESTER M. SOUTHAM. *Sloan-Kettering Inst.*

9:30 **1134.** A cellular basis for virus resistance. GAIL THEIS* AND HILARY KOPROWSKI. *Wistar Inst.*

9:45 **1135.** Immunization with aerosolized Venezuelan equine encephalomyelitis live virus vaccine. RALPH W. KUEHNE* AND WILLIAM S. GOCHENOUR, JR. *Ft. Detrick.*

10:00 **1136.** Silverwater virus: characterization of virus isolated from ticks collected in eastern Canada. DONALD M. MCLEAN. *Hosp. for Sick Children, Toronto.*

10:15 **1137.** Virus isolates from Panamanian mosquitoes and sandflies. PAULINE H. PERALTA,* PEDRO GALINDO* AND A. SHELOKOV. *Gorgas Memorial Lab.*

10:30 **1138.** Oral infection of swine with the encephalomyocarditis (EMC) virus. J. E. CRAIGHEAD,* P. H. PERALTA* AND T. G. MURNANE.* *Middle America Res. Unit, Panama Vet. Diagn. and Res. Lab., and Peter Bent Brigham Hosp.*

10:45 **1139.** Characteristics of two plaque types of encephalomyocarditis (EMC) virus. K. K. TAKEMOTO* AND H. LIEBHABER.* *Natl. Insts. of Health.*

11:00 **1140.** Agglutination of white blood cells by meningopneumonitis virus. I. L. SHECHMEISTER AND G. PARIKH.* *Southern Illinois Univ.*

11:15 **1141.** Kinetics of virus penetration. HENRY V. THORNE.* *Univ. of Minnesota and Research Inst., Pirbright, England.*

11:30 **1142.** Antimicrobial activity of abalone juice. C. P. LI, BENJAMIN PRESCOTT* AND W. G. JAHNES.* *Natl. Insts. of Health.*

111. Antigens and Antibodies I

TUES. A.M.—SHELBURNE, KERRY HALL

Chairman: H. F. Deutsch

9:00 **1143.** Serological analysis of phylogenetic relationships in protozoa. MORTON PADNOS* AND NORMAN MOLOMUT. *Waldemar Res. Fndn.*

9:15 **1144.** Phylogeny of the immune response. I: The agnathon, *Polystotrema stouti*. R. A. GOOD AND B. W. PAPERMASTER.* *Univ. of Minnesota.*

9:30 **1145.** Evolution of species specificity of human proteins. MORRIS GOODMAN. *Wayne State Univ.*

9:45 **1146.** Phylogenetic pathway of lens proteins. W. MANSKI, T. AUERBACH* AND S. P. HALBERT. *Columbia Univ.*

10:00 **1147.** Antigenic specificity of human 7S gamma globulin. EDWARD C. FRANKLIN AND DENNIS R. STANWCRTH.* *New York Univ.*

10:15 **1148.** Incidence of mouse ascites induced by adjuvant and/or staphylococcal-adjuvant mixtures in 17 different strains of mice. R. LIEBERMAN* AND N. MANTEL.* *Natl. Insts. of Health.*

10:30 **1149.** Electrophoretic analysis of serum and ascitic fluid proteins from immunized and non-immunized mice. R. T. JORDAN,* J. BANOVITZ,* I. L. TRAPANI* AND DAN H. CAMPBELL. *Natl. Jewish Hosp., Denver, and California Inst. of Technol.*

10:45 **1150.** Characterization of antibodies to penicillin. ALAN S. JOSEPHSON* AND EDWARD C. FRANKLIN. *New York Univ.*

11:00 **1151.** Demonstration of an anti-bacterial serum protein constituent of alpha-2:beta mobility by a new technic of protein electrophoresis in agar gel impregnated with bacteria. ELLIOTT F. OSSERMAN AND PETER F. KOHLER.* *Columbia Univ.*

11:15 **1152.** Separation of two allergenic components from a purified dwarf ragweed preparation by chromatography on DEAE cellulose. O. H. CALLAGHAN* AND A. R. GOLDFARB. *Chicago Med. Sch.* (Biochem.)

11:30 **1153.** Fractionation of low ragweed pollen antigens. T. P. KING.* *Rockefeller Inst.* (Biochem.)

Immunology Society Sessions—Tuesday, 1:30 p.m.

112. Tissue Antibodies. Autoantibodies

TUES. P.M.—SHELBURNE, GRANDE BALLROOM

Chairman: E. A. Kabat

1:30 **1154.** Role of adjuvants in experimental autoimmune thyroiditis. THELMA Y. DOEBBLER* AND NOEL R. ROSE. *Univ. of Buffalo.*

1:45 **1155.** Experimental allergic thyroiditis in inbred guinea pigs: some immunologic and pathologic aspects. PHILIP R. B. MCMASTER,* EDWIN M. LERNER II AND EURMAL D. EXUM.* *Natl. Insts. of Health.*

2:00 **1156.** Experimental immune thyroiditis in the guinea pig. PETER MIESCHER,* FRED GORSTEIN* AND BARUJ BENACERRAF. *New York Univ.*

2:15 **1157.** Production of experimental thyroiditis in rats and mice. RICHARD S. METZGAR* AND JAMES T. GRACE, JR.* *Roswell Park Inst.*

2:30 **1158.** Thermostable alcohol-insoluble organ specific antigen of bovine adrenal. FELIX MILGROM* AND ERNEST WITEBSKY. *Univ. of Buffalo.*

2:45 **1159.** Localization of a muscle-binding, complement-fixing serum globulin fraction in myasthenia gravis. ARTHUR STRAUSS,* ARLINE DEITCH* AND KONRAD HSU.* *Columbia Univ.*

3:00 **1160.** Evidence of separate organ-specific properties of

heart and skeletal muscle. M. H. KAPLAN AND M. MEYESERIAN.* *Western Reserve Univ.*

3:15 **1161.** Presidential address. ALBERT H. COONS. *Harvard Univ.*

113. Enteroviruses

TUES. P.M.—SHELBURNE, KERRY HALL

Chairman: J. P. Fox

1:30 **1162.** Effect of CO_2 on type II poliovirus infection. MARGARET I. SELLERS* AND JOHN F. LAVENDER.* *Univ. of California.*

1:45 **1163.** Intracellular sites of poliovirus reproduction. HILTON B. LEVY.* *Natl. Insts. of Health.*

2:00 **1164.** Serum inhibition of cytopathic effect and virus release of type 3 poliovirus vaccine. ERNEST V. ORSI,* GIACOMO MESSORE,* SEYMOUR LEVINE* AND MANUEL ROCA-GARCIA.* *Lederle Labs.*

2:15 **1165.** In vitro adsorption of poliovirus by non-cultured tissues. CALVIN M. KUNIN* AND WILLIAM S. JORDAN, JR. *Univ. of Virginia.*

2:30 **1166.** Structure and development of ECHO type 9 virus: observations by electron and light microscopy. R. A. RIFKIND,* G. C. GODMAN,* C. HOWE, C. MORGAN AND H. M. ROSE. *Columbia Univ.*

2:45 **1167.** Characterization of two viral agents isolated from infants with gastroenteritis. WILLIAM C. BRANCHE, JR.* AND VIOLA MAE YOUNG.* *Walter Reed Army Inst.*

Immunology Society Business Meeting

TUESDAY, 4:00 P.M.—SHELBURNE, GRANDE BALLROOM

Exhibits—Inspection Periods

Monday: 8:00 A.M. to 5:00 P.M.
Tuesday through Friday: 8:45 A.M. to 5:00 P.M.

Tickets

Tickets for group breakfasts, luncheons and dinners; Society dinners, Smokers and Mixers; and other Federation functions will be on sale in the registration area, Lobby, Convention Hall.
Hours: Sunday, 12:00 noon to 11:00 P.M.; Monday through Thursday, 8:00 A.M. to 5:00 P.M.

Future Annual Meetings

Federation Annual Meetings for the next three years will be held as follows: 1962, April 16–21, Atlantic City; 1963, April 15–20, Atlantic City; 1964, April 12–18, Chicago.

Physiology Society Coffee Lounge

Monday through Friday, 8:30 A.M.–5:00 P.M., Traymore, Sun Deck

Biochemistry Society Coffee Lounge

Monday through Friday, 8:30 A.M.–5:00 P.M., Convention Hall, Room C

Pharmacology Society Coffee Lounge

Monday through Friday, 8:30 A.M.–5:00 P.M., Dennis, Playroom

Pathology Society Coffee Lounge

Monday through Friday, 8:30 A.M.–5:00 P.M., Ritz-Carlton, Game Room

Nutrition Society Coffee Lounge

Monday through Friday, 8:30 A.M.–5:00 P.M., Ambassador, Sun Porch

Immunology Society Coffee Lounge

Monday through Friday, 8:30 A.M.–5:00 P.M., Shelburne, Solarium

Intersociety Coffee Lounge

Monday through Friday, 8:30 A.M.–5:00 P.M., Convention Hall, Room E

Wednesday, April 12

Intersociety Sessions—Wednesday, 9:00 a.m.

114. Neuropharmacology VI

WED. A.M.—CONVENTION HALL, ROOM A

Chairman: M. B. Chenoweth

9:00 **1168.** Effect of morphine on regeneration of brain norepinephrine after reserpine. D. X. FREEDMAN,* D. H. FRAM* AND N. J. GIARMAN. *Yale Univ.* (Pharmacol.)

9:15 **1169.** Effects of reserpine and thrombin on platelet serotonin. J. R. GAINTNER,* D. P. JACKSON* AND E. W. MAYNERT. *Johns Hopkins Univ.* (Pharmacol.)

9:30 **1170.** Pharmacology of SU-9064, an ether of methyl epireserpate. W. E. BARRETT, R. RUTLEDGE* AND A. J. PLUMMER. *Ciba Pharmaceut. Prod.* (Pharmacol.)

9:45 **1171.** Taming action of chlordiazepoxide. GEORGE A. HEISE* AND EDWARD BOFF.* *Hoffmann-La Roche.* (Pharmacol.)

10:00 **1172.** Chlorphentermine hydrochloride, p-chloro-α,α-dimethylphenethylamine hydrochloride, a new anorexigenic agent. J. A. GYLYS,* J. J. D. HART* AND M. R. WARREN. *Warner-Lambert Res. Inst.* (Pharmacol.)

10:15 **1173.** Chlorphentermine hydrochloride, p-chloro-α,α-dimethylphenethylamine hydrochloride, a new anorexigenic agent. II. Central nervous system activity. JANE F. EMELE,* J. SHANAMAN* AND M. R. WARREN. *Warner-Lambert Res. Inst.* (Pharmacol.)

10:30 **1174.** Chlorphentermine hydrochloride, p-chloro-α,α-dimethylphenethylamine hydrochloride, a new anorexigenic agent. III. Cardiovascular activity. G. C. BOXILL,* M. BEN,* R. L. DETAR, JR.* AND M. R. WARREN. *Warner-Lambert Res. Inst.* (Pharmacol.)

10:45 **1175.** Some aspects of the pharmacology of benzphetamine hydrochloride. W. VELDKAMP,* A. P. TAZELAAR, JR.* AND H. H. KEASLING. *Upjohn Co.* (Pharmacol.)

11:00 **1176.** Acetylcholinesterase regeneration in cholinergic neurons after diisopropylphosphorylation. EDWARD KOENIG* AND G. B. KOELLE. *Univ. of Pennsylvania.* (Pharmacol.)

11:15 **1177.** Metabolic fate of chlordiazepoxide. B. A. KOECHLIN* AND M. A. SCHWARTZ.* *Hoffmann-La Roche.* (Pharmacol.)

115. Thyroxine

WED. A.M —CONVENTION HALL, ROOM 20

Chairman: R. L. Greif

9:00 **1178.** Free and bound thyroxine in serum. K. STERLING* AND M. TABACHNICK.* *New York State Psychiat. Inst. and Columbia Univ.* (Physiol.)

9:15 **1179.** Resin chromatography of I^{131} labeled amino acids in serum from humans. G. L. SEARLE, W. A. REILLY* AND K. G. SCOTT. *VA Hosp. and Univ. of California Med. Ctr.* (Physiol.)

9:30 **1180.** Binding of L-thyroxine and L-triiodothyronine by human serum albumin. M. TABACHNICK* AND K. STERLING.* *New York State Psychiat. Inst. and Columbia Univ.* (Biochem.)

9:45 **1181.** Thyroxine binding by albumin. G. L. TRITSCH.* *Roswell Park Mem. Inst.* (Physiol.)

10:00 **1182.** Thyroxine and protein release from mitochondria. R. L. GREIF. *Cornell Univ. Med. Coll.* (Physiol.)

10:15 **1183.** Effects of thyroxine and triiodothyropropionic acid on growth of thiouracil treated rats. R. L. KROC, N. R. STASILLI AND P. J. NEMITH. *Warner-Lambert Res. Inst.* (Physiol.)

10:30 **1184.** Deiodination of I^{131} triiodothyropropionic acid. S. L. JONES.* *Univ. of Tennessee.* (Physiol.)

10:45 **1185.** Thyroxine action on incorporation of proline into kidney slice protein. R. W. HANSON,* R. H. LINDSAY* AND S. B. BARKER. *Univ. of Alabama Med. Ctr.* (Physiol.)

11:00 **1186.** Plasma protein factors influencing thyroxine metabolism. W. YEN.* *Jefferson Med. Coll.* (Physiol.)

11:15 **1187.** Inhibition of oxygen consumption of rat liver homogenates by chelators. H. J. LIPNER AND M. C. MUNTZ.* *Florida State Univ.* (Physiol.)

11:30 **1188.** Succinic dehydrogenase activity of tissues from thyroxine injected athyroid rats. A. STEFFEK,* H. KLITGAARD AND A. F. RIECK. *Marquette Univ.* (Physiol.)

11:45 **1189.** Thyroxine excretion in lactating rats. C. E. GROSVENOR. *Univ. of Tennessee Med. Sch.* (Physiol.)

Intersociety Sessions—Wednesday, 1:30 p.m.

116. SYMPOSIUM: Gastroenterology

WED. P.M.—RITZ-CARLTON, RITZ HALL

Chairmen: N. Zamcheck; T. H. Wilson

1:30 **1190.** Introductory remarks. NORMAN ZAMCHECK. *Boston City Hosp.*

1:35 **1191.** Intestinal absorption with special reference to amino acids. HALVOR N. CHRISTENSEN. *Univ. of Michigan.*

2:05 **1192.** Search for controlling mechanism of iron absorption. THOMAS C. CHALMERS. *Lemuel Shattuck Hosp.*

2:35 **1193.** Physical state of lipids in intestinal content. BENGT BORGSTRÖM. *Univ. of Lund, Sweden.*

3:05 **1194.** Developmental adaptations of phosphatases in the small intestine. FLORENCE MOOG. *Washington Univ.*

3:35 **1195.** Morphologic reaction of the intestine of germ-free animals to oral bacteria and some implications in clinical sprue and cholera. HELMUT SPRINZ. *Walter Reed Army Med. Ctr.*

4:05 **1196.** Some biological implications of intestinal endotoxin. HERBERT A. RAVIN AND JACOB FINE. *Beth Israel Hosp. and Harvard Med. Sch.*

117. Atherosclerosis III: Cholesterol Metabolism

WED. P.M.—CONVENTION HALL, ROOM B

Chairmen: G. V. Mann; D. Kritchevsky

1:30 **1197.** Utilization of methionine-methyl-C^{14} for cholesterol synthesis. CECILE H. EDWARDS, JOHN C. HOLLEY,* JAMES A. RICE,* EVELYN L. GADSDEN* AND GERALD A. EDWARDS. *Agric. and Tech. Coll. of North Carolina.* (Nutr.)

1:45 **1198.** Effects of ethionine and methionine on serum and liver lipids in the cholesterol-fed rat. J. C. SEIDEL* AND A. E. HARPER. *Univ. of Wisconsin.* (Nutr.)

2:00 **1199.** Solubility of cholesterol in dietary fats. FRANCISCO GRANDE AND SHOHACHI WADA.* *Jay Phillips Res. Lab., Mount Sinai Hosp. and Univ. of Minnesota.* (Nutr.)

2:15 **1200.** Effect on serum cholesterol in man of fatty acids produced by hydrogenation of corn oil. JOSEPH T. ANDERSON, FRANCISCO GRANDE AND ANCEL KEYS. *Univ. of Minnesota and Hastings State Hosp.* (Nutr.)

2:30 **1201.** Blood lipid studies in a rhesus monkey with essential hypercholesterolemia. L. D. GREENBERG AND H. D. MOON. *Univ. of California.* (Biochem.)

2:45 **1202.** Effect of dietary fat and oil on serum and liver cholesterol in female chicks. E. C. MILLER,* H. MENGE AND C. A. DENTON. *U. S. Dept. of Agriculture.* (Nutr.)

3:00 **1203.** Effect of protein intake on serum cholesterol. HAZEL METZ FOX,* HELLEN LINKSWILER AND PEGGY CROOKE FRY.* *Univ. of Nebraska.* (Nutr.)

3:15 **1204.** Comparative effects of exercise and food restriction on body composition and blood serum cholesterol concentration in rats. E. M. JONES,* P. B. JOHNSON,* H. J. MONTOYE* AND W. D. VAN HUSS.* *Michigan State Univ.* (Nutr.)

3:30 **1205.** Cardiovascular stress in refeeding after starvation. G. S. SMITH* AND B. CONNOR JOHNSON. *Univ. of Illinois.* (Nutr.)

3:45 **1206.** Serum cholesterol and thyroid activity as affected by high environmental temperature. ETHEL M. THOMPSON AND MARY ANN KIGHT.* *Univ. of Arizona.* (Nutr.)

4:00 **1207.** Mobilization of tissue cholesterol by 3,5 diiodothyroacetic acid (Diac). W. R. RUEGAMER AND F. R. SILVERMAN.* *VA Hosp. and State Univ. of New York, Upstate Med. Ctr.* (Biochem.)

118. Neuropharmacology VII

WED. P.M.—CONVENTION HALL, ROOM A

Chairman: C. J. Carr

1:30 **1208.** Convulsant effects of cocaine. E. EIDELBERG, H. LESSE* AND F. P. GAULT.* *UCLA and Long Beach VA Hosp.* (Physiol.)

1:45 **1209.** Lowered convulsive thresholds to hexafluorodiethyl ether produced by drugs with differential effects on brain serotonin and norepinephrine levels. EDWARD B. TRUITT, JR. AND ETHEL M. EBERSBERGER.* *Univ. of Maryland.* (Pharmacol.)

2:00 **1210.** Acetylcholine-tetracaine-eserine competition. HENRY HIGMAN* AND EVA BARTELS.* *Columbia Univ.* (Physiol.)

2:15 **1211.** Reversible block of axonal conduction by d-tubocurarine after treatment with cobra venom. PHILIP ROSENBERG* AND SEYMOUR EHRENPREIS. *Columbia Univ.* (Biochem.)

2:30 **1212.** Anticonvulsant effect of Librium in epileptic monkeys. JOSEPH G. CHUSID AND LENORE M. KOPELOFF.* *St. Vincent's Hosp. and New York State Psychiat. Inst.* (Physiol.)

2:45 **1213.** Circadian susceptibility rhythm of mice to Librium. EGON MARTE* AND FRANZ HALBERG. *Cambridge (Minnesota) State Sch. and Hosp. and Univ. of Minnesota.* (Physiol.)

3:00 **1214.** Effect of iproniazid and amino acid loads on urinary excretion of tryptamine and indole acetic acid by schizophrenic patients. ELWOOD H. LABROSSE.* *Natl. Insts. of Health.* (Physiol.)

3:15 **1215.** Uniform response of biogenic amines to psychotropic drugs in selected schizophrenic patients. G. R. PSCHEIDT, G. W. BRUNE* AND H. E. HIMWICH. *Galesburg State Res. Hosp.* (Physiol.)

3:30 **1216.** Correlations between psychotropic drug effects, water and mineral metabolism in schizophrenic patients. G. W. BRUNE.* *Galesburg State Res. Hosp.* (Pharmacol.)

3:45 **1217.** Evoked optic potential changes induced by plasma globulins from schizophrenics. J. R. BERGEN, W. P. KOELLA, J. CZICMAN* AND H. HOAGLAND. *Worcester Fndn. for Exper. Biol.* (Physiol.)

4:00 **1218.** Urinary chromogens and the Reigelhaupt test for schizophrenia. A. YUWILER* AND R. W. GERARD. *Univ. of Michigan and Ypsilanti State Hosp.* (Physiol.)

119. Pituitary

WED. P.M.—CONVENTION HALL, ROOM 21

Chairman: S. M. McCann

1:30 **1219.** Effect of subcutaneous transplants of hypothalamus and pituitary gland on estrous cycle of mouse. D. G. MONTEMURRO* AND W. U. GARDNER.* *Yale Univ.* (Nutr.)

1:45 **1220.** Spinal cord and ACTH release in adrenalectomized rats. E. S. REDGATE. *Western Reserve Univ.* (Physiol.)

2:00 **1221.** Liberation of anti-diuretic hormone from neurohypophysis following hypothalamic stimulation in dog. H. S. FANG* AND S. C. WANG. *Columbia Univ.* (Physiol.)

2:15 **1222.** Isolation and characterization of vasopressin containing particles. H. WEINSTEIN,* S. MALAMED AND H. SACHS.* *Western Reserve Univ. and Albert Einstein Coll.* (Physiol.)

2:30 **1223.** Acute reduction in extracellular fluid volume and vasopressin secretion. L. SHARE. *Western Reserve Univ.* (Physiol.)

2:45 **1224.** Effects of neurohypophysial hormones on urinary electrolyte excretion in conscious dogs. W. Y. CHAN* AND W. H. SAWYER. *Columbia Univ.* (Physiol.)

3:00 **1225.** Retardation of mammary involution in hypophysectomized, postpartum rats by oxytocin. J. MEITES AND T. F. HOPKINS.* *Michigan State Univ.* (Physiol.)

3:15 **1226.** Vasopressin biosynthesis II, in vivo studies. H. SACHS, H. WEINSTEIN* AND E. S. REDGATE.* *Western Reserve Univ.* (Biochem.)

3:30 **1227.** Native state of oxytocic hormone in posterior pituitary gland. R. E. SMITH* AND M. ROSENFELD. *Johns Hopkins Univ.* (Pharmacol.)

120. Blood Clotting III

WED. P.M.—SHELBURNE, CORAL REEF ROOM

Chairmen: W. H. Seegers; A. L. Copley

1:30 **1228.** "Contact" factor, factor IX, and serum thrombotic accelerator (STA) activity. STANLEY M. REIMER* AND STANFORD WESSLER. *Beth Israel Hosp. and Harvard Med. Sch.* (Physiol.)

1:45 **1229.** Calcium ion optima for thrombin generation in fishes. R. F. DOOLITTLE* AND D. M. SURGENOR. *Harvard Med. Sch.* (Biochem.)

2:00 **1230.** Thrombin catalyzed hydrolysis of nitrophenyl esters. L. LORAND, W. T. BRANNEN, JR.* AND N. G. RULE.* *Northwestern Univ.* (Biochem.)

2:15 **1231.** Partial purification of vasculokinase. MARVIN MURRAY.* *Univ. of Louisville.* (Physiol.)

2:30 **1232.** Preparation of human thrombin and effect of infusion into dogs. B. E. SANDERS,* M. N. RICHARD,* E. V. C. SMITH,* L. I. PRIESTER,* S. A. HERCZEG* AND L. S. WATSON.* *Merck Inst. for Therap. Res.* (Biochem.)

2:45 **1233.** Physical chemical properties of bovine thrombin. C. R. HARMISON,* R. H. LANDABURU* AND WALTER H. SEEGERS. *Wayne State Univ.* (Physiol.)

3:00 **1234.** Comparative study on the anticoagulant action of TAME and the anticoagulant fraction of incubated fibrinogen (AFIF). D. C. TRIANTAPHYLLOPOULOS.* *Univ. of Alberta.* (Physiol.)

3:15 **1235.** Fragmentation of bovine fibrinogen by trypsin. ELEMER MIHALYI AND JAMIE E. GODFREY.* *Natl. Inst. of Health.* (Biochem.)

3:30 **1236.** An enzyme involved in insoluble fibrin formation. ARIEL G. LOEWY.* *Haverford Coll.* (Biochem.)

3:45 **1237.** Fibrinized surfaces and fibrin powder as anticoagulants. A. L. COPLEY AND E. E. CLIFFTON.* *N. Y. Med. Coll. and Sloan Kettering Inst.* (Physiol.)

121. Cell and Tissue Culture II

WED. P.M.—DENNIS, ST. DENIS ROOM

Chairman: M. Schaeffer

1:30 **1238.** Cytopathogenic effect of nutritional deficiencies in tissue culture. RENE JAHIEL* AND DEBORAH B. JAHIEL.* *Mt. Sinai Hosp., New York.* (Pathol.)

1:45 **1239.** Selective utilization of amino acids by mammalian cell cultures. KENNETH S. MCCARTY.* *Duke Univ.* (Biochem.)

2:00 **1240.** Modification of free amino acid pools of strain L mouse fibroblasts in tissue culture. R. J. KUCHLER* AND R. C. GRAUER. *Allegheny Hosp., Pittsburgh.* (Pathol.)

2:15 **1241.** Amino acid constitution of fetuin. H. W. FISHER,* D. O'BRIEN* AND T. T. PUCK. *Univ. of Colorado.* (Immunol.)

2:30 **1242.** Requirement by cultured mammalian cells for metabolites which they can synthesize. HARRY EAGLE AND KARL A. PIEZ. *Natl. Insts. of Health.* (Biochem.)

2:45 **1243.** Effects of glucose on glycogen metabolism in HeLa cells. J. B. ALPERS* AND RAY WU. *New York City Public Health Inst.* (Biochem.)

3:00 **1244.** Mechanism of resistance to 2-deoxyglucose. STANLEY BARBAN. *Natl. Insts. of Health.* (Biochem.)

3:15 **1245.** Metabolism of glutamine by mouse L cells. PAUL A. KITOS,* RONALD SINCLAIR* AND CHARITY WAYMOUTH.* *Jackson Mem. Lab. and Univ. of Kansas.* (Biochem.)

3:30 **1246.** Characterization of a nutritional variant of human esophageal epithelial cells. S. G. BRADLEY* AND J. T. SYVERTON. *Univ. of Minnesota.* (Pathol.)

3:45 **1247.** Lipid metabolism in cultured mammalian cells. J. MARTYN BAILEY,* JOHN H. BRAZINSKY,* EDWARD J. WALSH* AND CHOONG WOO.* *George Washington Univ.* (Biochem.)

4:00 **1248.** Fatty acids of lipids of HeLa cells and strain L fibroblasts. ROBERT P. GEYER AND ANN BENNETT.* *Harvard Univ.* (Nutr.).

4:15 **1249.** Growth of mammalian cells in the presence of orotic acid. W. B. SAVCHUK* AND W. L. LOCKHART.* *Food and Drug Admin.* (Nutr.).

4:30 **1250.** Properties of alkaline phosphatase in human cell cultures. F. HERZ AND H. M. NITOWSKY. *Johns Hopkins Univ.* (Nutr.).

Intersociety Symposia

See pages 459, 478, 502, 523, 544 for symposia on Effects of Hallucinogenic Drugs on Man, Gastroenterology, The Hemicholiniums, Lipid Metabolism Use and Care of Laboratory Animals, and Viruses and Neoplasia.

Physiology Society Sessions—Wednesday, 9:00 a.m.

122. SESSION ON TEACHING: Physiological Training for Clinical Investigators

WED. A.M.—TRAYMORE, ROSE ROOM

Chairman: J. R. Brobeck

9:00 **1251.** Correlated clinical science courses. R. E. FORSTER, II. *Univ. of Pennsylvania.*

9:20 **1252.** USPHS supported training programs. R. F. RUSHMER. *Univ. of Washington, Seattle.*

9:40 **1253.** Mayo Foundation fellowship program. K. B. CORBIN. *Mayo Clinic.*

10:00 **1254.** Mayo Foundation fellowship program. E. H. WOOD AND H. BURCHELL. *Mayo Fndn. and Mayo Clinic.*

10:20 **1255.** Ph.D. programs for medical graduates. E. B. BROWN. *Univ. of Minnesota.*

10:40 **1256.** Training in basic science as a part of postdoctoral medical education. P. NEMIR. *Grad. Sch. of Med., Univ. of Pennsylvania.*

11:00 **1257.** Conference and question period. J. H. COMROE, JR., M. B. VISSCHER AND DRS. FORSTER, RUSHMER, CORBIN, WOOD, BURCHELL, BROWN AND NEMIR.

123. Gastrointestinal Motility; Secretion

WED. A.M.—CONVENTION HALL, ROOM B

Chairman: C. F. Code

9:00 **1258.** Effect of insulin induced hypoglycemia and reversal of hypoglycemia by glucose on motor activity of fully innervated part of stomach and Heidenhain pouch of dogs. S. H. LORBER AND H. SHAY. *Fels Res. Inst.*

9:15 **1259.** Effect of intraduodenal fat on pyloric antrum and pyloric sphincter motor activity. H. S. LOUCKES, J. P. QUIGLEY AND R. T. O'KELL.* *Univ. of Tennessee Med. Units.*

9:30 **1260.** Effect of bile salts on canine gastric motor activity. R. T. O'KELL,* H. S. LOUCKES AND J. P. QUIGLEY. *Univ. of Tennessee Med. Units.*

9:45 **1261.** Motor and electric activity of gastroduodenal junction. H. C. CARLSON,* R. A. NELSON* AND C. F. CODE. *Mayo Clinic and Mayo Fndn.*

10:00 **1262.** Pacemaker function of small intestine. R. HASSELBRACK* AND J. E. THOMAS. *Coll. of Med. Evangelists.*

10:15 **1263.** Gastric and duodenal motility with fiberscope. B. I. HIRSCHOWITZ AND J. A. BALINT. *Univ. of Alabama Med. Ctr.*

10:30 **1264.** Practical notes on recording salivary conditional reflex in man. R. A. KATZ* AND G. F. SUTHERLAND. *Spring Grove State Hosp., Baltimore.*

10:45 **1265.** Hydrogen ion concentration in "parietal secretion". M. ALTAMIRANO, J. L. WERTHER* AND F. HOLLANDER. *Mt. Sinai Hosp., New York.*

11:00 **1266.** Neutral protein-carbohydrate complex from canine gastric mucus. M. I. HOROWITZ* AND F. HOLLANDER. *Mt. Sinai Hosp., New York.*

11:15 **1267.** Excitation of pancreatic secretion by soap extracts of intestinal mucosa. M. H. F. FRIEDMAN, J. MAYLOCK* AND R. GREEN.* *Jefferson Med. Coll.*

11:30 **1268.** Lipoprotein lipase in exocrine secretion of pancreas. J. KESSLER,* M. FINKEL* AND H. D. JANOWITZ. *Mt. Sinai Hosp., New York.*

11:45 **1269.** Activation of pancreatic lipase by bile derivatives. I. MELCER* AND E. A. LAZO-WASEM. *Wilson Labs.*

12:00 **1270.** Etiology of acute hemorrhagic pancreatitis in relation to mechanism of activation of pancreatic proteases. R. H. EISENHARDT,* G. W. HARTZELL, JR.,* T. KUBISTA* AND C. HIMEL.* *Univ. of Pennsylvania Sch. of Med.*

124. Renal Tubule

WED. A.M.—CONVENTION HALL, ROOM 21

Chairman: W. D. Lotspeich

9:00 **1271.** Creatinine excretion by dog kidney during severe mannitol diuresis. R. E. SWANSON* AND A. HAKIM.* *Univ. of Minnesota.*

9:15 **1272.** Metabolism of C^{-14} labeled substrates by rabbit kidney cortex and medulla. J. B. LEE,* V. K. VANCE* AND G. F. CAHILL, JR. *Peter Bent Brigham Hosp. and Harvard Med. Sch.*

9:30 **1273.** Tubular synthesis and secretion of Krebs cycle acids in chicken. W. D. LOTSPEICH AND S. WORONKOW.* *Univ. of Rochester Med. Ctr.*

9:45 **1274.** Effects of glutamic and aspartic acids on renal clearance of endogenous amino acids. W. A. WEBBER.* *Cornell Univ. Med. Coll.*

10:00 **1275.** Renal clearance of fructose in dogs. D. P. LAULER,* J. B. LEE,* R. B. BOURNE* AND J. P. MERRILL. *Peter Bent Brigham Hosp. and Harvard Med. Sch.*

10:15 **1276.** Renal clearance of citric acid in dog. A. P. GROLLMAN,* H. C. HARRISON AND H. E. HARRISON. *Johns Hopkins Univ. and Baltimore City Hosps.* (Nutr.)

10:30 **1277.** Effect of selective, unilateral renal tubular damage on excretion of citrate. T. F. NICHOLSON. *Univ. of Toronto.*

10:45 **1278.** Isolation and chromatographic separation of ovine urinary colloids on differing diets and following diethylstilbesterol administration. C. E. CORNELIUS,* J. A. BISHOP* AND L. R. BERGER.* *Univ. of California, Davis.*

11:00 **1279.** Removal of ribonuclease from blood and its catabolism in kidney. W. L. HUGHES AND F. GREGOIRE.* *Brookhaven Natl. Lab.* (Biochem.)

125. Liver; Aging

WED. A.M.—CONVENTION HALL, ROOM 13

Chairman: H. W. Davenport

9:00 **1280.** Liver lipid as source of embolic fat. G. OWENS, J. SOKAL, K. GERSZI AND M. NORTHINGTON. *Roswell Park Mem. Inst.*

9:15 **1281.** Formation of hepatic lymph. J. S. KREBS, G. F. LEONG,* J. L. BOLLMAN AND R. W. BRAUER. *USN Radiol. Def. Lab., San Francisco, and Mayo Clinic.*

9:30 **1282.** Mammalian biliverdin reductase. J. W. SINGLETON* AND L. LASTER.* *Natl. Insts. of Health.* (Biochem.)

9:45 **1283.** Source of serum glycoproteins. O. W. NEUHAUS,* H. F. BALEGNO* AND A. T. MILAUSKAS.* *Wayne State Univ.* (Nutr.)

10:00 **1284.** Oxygen uptake and anoxia of liver. R. W. BRAUER, G. F. LEONG* AND R. J. HOLLOWAY.* *USN Radiol. Def. Lab., San Francisco.*

10:15 **1285.** Regeneration following partial hepatectomy as function of age in mouse. R. L. STRAUBE AND H. M. PATT. *Argonne Natl. Lab.*

10:30 **1286.** DNA synthesis during hepatic regeneration in rats of various ages. N. L. R. BUCHER, J. F. DITROIA* AND M. N. SWAFFIELD.* *Massachusetts Gen. Hosp.*

10:45 **1287.** Age-related changes in metabolism of RNA. T. C. DETWEILER* AND H. H. DRAPER.* *Univ. of Illinois.*

11:00 **1288.** Nitrogen and electrolyte contents in young and old female Fischer rats. A. K. WEISS, W. G. MOSS, J. C. BLACK* AND B. J. MATERSON.* *Univ. of Miami.*

126. Coronary

WED. A.M.—TRAYMORE, AMERICAN ROOM

Chairman: D. E. Gregg

9:00 **1289.** Coronary and systemic hemodynamic effects of hyperventilation. G. G. ROWE, C. A. CASTILLO,* S. AFONSO* AND C. W. CRUMPTON. *Univ. of Wisconsin.*

9:15 **1290.** Myocardial tissue blood flow after coronary occlusion and surgical measures. P. H. HEDENSTROM,* R. R. RAYNER* AND L. D. MACLEAN. *Univ. of Minnesota and Ancker Hosp.*

9:30 **1291.** Nucleotide degradation in hypoxic heart and its possible relation to regulation of coronary blood flow. R. M. BERNE. *Western Reserve Univ.*

9:45 **1292.** Effect of Ca^{++} on myocardial oxygen consumption and coronary flow. H. FEINBERG AND L. N. KATZ. *Michael Reese Hosp.*

10:00 **1293.** Potassium and oxygen content of retrograde blood flow in occluded and catheterized coronary artery. R. A. RUSSELL,* A. J. BOCAGE* AND W. R. BLACKBURN.* *Louisiana State Univ.*

10:15 **1294.** Effect of cardiac accelerator and atrial stimulation on myocardial potassium exchange in dogs anesthetized with sodium pentobarbital. R. G. SYBERS* AND Q. R. MURPHY. *Univ. of Wisconsin.*

10:30 **1295.** Oxygen uptake of dog heart. K. GREENSPAN* AND P. F. CRANEFIELD. *State Univ. of New York.*

10:45 **1296.** Effect of ventricular distention and its release on myocardial oxygen uptake. W. P. MCKEEVER,* H. BRAUN* AND M. KOSMIN.* *Northwestern Univ. and Evanston Hosp.*

11:00 **1297.** Intercoronary reflex; demonstration by coronary angiography. S. V. GUZMAN,* E. SWENSON* AND M. JONES.* *Univ. of California, San Francisco, and Univ. of Philippines.*

11:15 **1298.** Left ventricular heat production measured by coronary flow and temperature gradient. W. A. NEILL, H. J. LEVINE, R. J. WAGMAN, J. V. MESSER, N. KRASNOW, S. L. HENSEL AND R. GORLIN. *Peter Bent Brigham Hosp.*

11:30 **1299.** Left ventricular heat loss into the coronary vascular bed of the dog. R. J. ADOLPH* AND G. PINARDI.* *Univ. of Washington.*

11:45 **1300.** Chronic catheterization of coronary artery; infusion of autonomic drugs in unanesthetized dog. A. C. BARGER, M. R. LIEBOWITZ* AND J. A. HERD.* *Harvard Med. Sch.*

127. Control of Respiration; Tissue Respiration

WED. A.M.—TRAYMORE, TRAYMORE ROOM

Chairman: M. H. Williams, Jr.

9:00 **1301.** Mechanical changes in lung of cat accompanying an inspiratory-excitatory reflex. L. B. REYNOLDS.* *Med. Coll. of South Carolina.*

9:15 **1302.** Midbrain facilitation of respiratory responses. B. R. FINK,* R. L. KATZ,* H. REINOLD* AND A. SCHOOLMAN.* *Columbia Univ.*

9:30 **1303.** Excitation of respiratory neurons by chemical agents. J. K. KIM* AND F. G. CARPENTER. *Dartmouth Med. Sch.*

9:45 **1304.** Nervous control of trachea and lower airways in dogs. J. A. NADEL* AND J. G. WIDDICOMBE.* *Univ. of California, San Francisco.*

10:00 **1305.** Impulses in efferent nerve fibers to trachea. J. G. WIDDICOMBE.* *Univ. of California, San Francisco.*

10:15 **1306.** Tissue pCO_2 AND pO_2 in situ by microtonometry. H. D. VAN LIEW.* *Harvard Sch. of Public Health.*

10:30 **1307.** Oxygen consumption of tissues in human lung. H. W. FRITTS, JR., M. L. LEWIS,* C. GIUNTINI,* J. H. WALKER* AND W. A. WICHERN, JR.* *Columbia Univ.*

128. Neurochemistry

WED. A.M.—TRAYMORE, BELVEDERE ROOM

Chairman: R. D. Tschirgi

9:00 **1308.** Neonatal brain oxygen. A. BERAN,* G. A. MISRAHY, J. F. SPRADLEY* AND S. DZINOVIC. *Childrens Hosp., Los Angeles.*

9:15 **1309.** Synthesis of ATP and ADP at site of aqueous humor production. M. B. WAITZMAN AND T. HUANG. *Western Reserve Univ.*

9:30 **1310.** Characterization of subcellular particles from brain. F. E. SAMSON, JR., W. M. BALFOUR* AND R. J. JACOBS.* *Univ. of Kansas.*

9:45 **1311.** Regional concentration of ATP in cat cerebral cortex. J. H. MENDELSON,* R. G. GRENELL, F. ERVIN* AND R. LLINAS.* *Massachusetts Gen. Hosp. and Univ. of Maryland.*

10:00 **1312.** "Solubilization" of cholinesterase from rabbit caudate nuclei by surface active agents. M. H. APRISON AND R. L. JACKSON.* *Inst. of Psychiat. Res. and Indiana Univ.*

10:15 **1313.** High-energy phosphates in developing brain. R. N. LOLLEY,* W. M. BALFOUR* AND F. E. SAMSON, JR. *Univ. of Kansas.*

10:30 **1314.** Oxidation of amino acids in brain homogenates. B. SCHEPARTZ.* *Jefferson Med. Coll.*

10:45 **1315.** Properties of polypeptide formed by incubating cerebrospinal fluid with plasma globulin. L. F. CHAPMAN, A. O. RAMOS* AND H. G. WOLFF. *New York Hosp. and Cornell Med. Ctr.*

11:00 **1316.** Effect of stressor agents on potassium release of rat brain. F. B. BENJAMIN, J. N. ANASTASI* AND W. M. HELVEY. *Republic Aviation Corp., Farmingdale, New York.*

11:15 **1317.** Some biochemical correlates of imprinting. S. EIDUSON,* E. GELLER* AND W. BECKWITH.* *VA Ctr. and UCLA.* (Immunol.)

Physiology Society Sessions—Wednesday, 1:30 p.m.

129. Renal Concentrating Mechanism

WED. P.M.—CONVENTION HALL, ROOM 20

Chairman: R. W. Berliner

1:30 **1318. INTRODUCTORY REMARKS.** The urinary concentrating mechanism with special reference to the role of urea. R. W. BERLINER. *Natl. Insts. of Health.*

2:00 **1319.** Enhancement of renal concentrating ability by compounds chemically related to urea. R. H. KELLOGG AND L. RABINOWITZ.* *Univ. of California Med. Ctr., San Francisco.*

2:15 **1320.** Urinary concentration and urea concentration of papilla and urine in the rat. G. A. BRAY* AND A. S. PRESTON.* *Natl. Insts. of Health.*

2:30 **1321.** Composition of renal medulla during water diuresis. H. LEVITIN, D. BECK, A. GOODMAN, G. PIGEON AND F. H. EPSTEIN. *Yale Sch. of Med.*

2:45 **1322.** Effects of renal plasma flow rate and glomerular filtration rate on urine concentration. P. ABBRECHT* AND R. L. MALVIN. *Univ. of Michigan.*

3:00 **1323.** Countercurrent exchange in renal medullary vascular bundles. H. C. MAGANZINI* AND L. S. LILIENFIELD. *Georgetown Univ.*

3:15 **1324.** Intrarenal distribution of flow as influenced by norepinephrine infusion. W. D. BLAKE. *Univ. of Maryland Sch. of Med.*

3:30 **1325.** Post infusion effects of osmotic agents on $T^{C}_{H_2O}$ and sodium reabsorption. H. E. GINN, E. KATZ AND E. L. BECKER. *Cornell Univ. Med. Coll.*

3:45 **1326.** Enhancement of urinary dilution by partial ureteral obstruction. J. F. MONROE,* E. H. BRESLER* AND J. E. PEARSON, JR.* *VA Hosp. and Tulane Univ. Sch. of Med.* (Biochem.)

130. Temperature Regulation

WED. P.M.—CONVENTION HALL, ROOM 13

Chairman: J. D. Hardy

1:30 **1327. INTRODUCTORY REMARKS.** Temperature regulation. J. D. HARDY. *Naval Air Develop. Ctr.*

2:00 **1328.** Quantitative relations between stimuli and responses in "physical" and "chemical" temperature regulation of man. T. H. BENZINGER. *Naval Med. Res. Inst.*

2:15 **1329.** Chronic deficits of temperature regulation produced by lesions in preoptic region of cats. F. H. JACOBSON AND R. D. SQUIRES. *U.S. Naval Air Develop. Ctr.*

2:30 **1330.** Hypothalamic EEG correlates of thermoregulatory responses in unanesthetized dogs. J. S. EISENMAN,* J. D. HARDY AND H. T. HAMMEL. *Univ. of Pennsylvania.*

2:45 **1331.** Recording of activity in anterior hypothalamus during periods of local heating. T. NAKAYAMA* AND J. S. EISENMAN.* *Univ. of Pennsylvania.*

3:00 **1332.** Effect of septal and hypothalamic lesions on shivering. D. G. STUART,* A. HEMINGWAY AND Y. KAWAMURA.* *UCLA Med. Ctr. and Osaka Univ. Dental Sch., Osaka, Japan.*

3:15 **1333.** Hypothalamic temperature responses to blood flow and anesthesia. R. D. MCCOOK,* C. N. PEISS AND W. C. RANDALL. *Loyola Sch. of Med.*

3:30 **1334.** Thermal regulatory responses of unanesthetized dogs while maintaining hypothalamic temperature constant and varying skin temperature. H. T. HAMMEL, D. C. JACKSON* AND J. D. HARDY. *Univ. of Pennsylvania.*

3:45 **1335.** Where thermoregulation is not maintained. P. WEBB. *Webb Associates, Yellow Springs, Ohio.*

4:00 **1336.** Effects of sleep deprivation on body temperatures. M. B. KREIDER.* *Army QM Res. and Engineer. Ctr.*

4:15 **1337.** Rates of adjustment of sweating and body temperatures following exposure to heat. B. A. HERTIG* AND H. S. BELDING. *Univ. of Pittsburgh.*

131. Hypertension

WED. P.M.—TRAYMORE, AMERICAN ROOM

Chairman: D. F. Bohr

1:30 **1338.** Water and electrolyte content of arteries in dogs. A. W. JONES,* E. O. FEIGL* AND L. H. PETERSON. *Univ. of Pennsylvania.*

1:45 **1339.** Seasonal variation in avian blood pressure. H. S. WEISS. *Rutgers Univ.*

2:00 **1340.** Plasma corticosterone levels and hypertension in rats. P. M. HYDE AND F. R. SKELTON.* *Louisiana State Univ. and Urban Maes Res. Fndn.* (Biochem.)

2:15 **1341.** Anti-hypertensive renal function; protection against sodium loads by renal tissue and renal extract. E. E. MUIRHEAD, M. KOSINSKI* AND B. BROOKS.* *Wayne State Univ.*

2:30 **1342.** Persistence of renin in blood of intact, nephrectomized and cortexone-treated rats. P. RONDELL AND F. GROSS.* *Ciba Limited.*

2:45 **1343.** Effect of aldactone on urinary aldosterone, sodium and potassium in essential hypertension. J. B. GARST, N. P. SHUMWAY,* H. SCHWARTZ* AND G. L. FARRELL.* *Crile VA Hosp. and Western Reserve Univ.* (Biochem.)

3:00 **1344.** Sodium and potassium shifts associated with peripheral resistance changes in dog. J. D. JAMIESON* AND S. M. FRIEDMAN. *Univ. of British Columbia, Vancouver.*

3:15 **1345.** Increased sodium and water in wall of hypertensive arterioles. L. TOBIAN, J. JANECEK,* A. TOMBOULIAN* AND D. FERREIRA.* *Univ. of Minnesota Hosp. and Sch. of Med.*

3:30 **1346.** Activity of thyroid gland during development of renal hypertension in rats. M. J. FREGLY AND J. V. GONZALEZ.* *Univ. of Florida.*

3:45 **1347.** Factors which initiate or influence edema in isolated dog heart. P. F. SALISBURY, C. E. CROSS* AND P. A. RIEBEN.* *St. Joseph Hosp., Burbank, California.*

4:00 **1348.** Left ventricular dynamics influenced by coronary perfusion and by myocardial edema. C. E. CROSS,* P. A. RIEBEN* AND P. F. SALISBURY. *St. Joseph Hosp., Burbank, California.*

132. Pulmonary Circulation II

WED. P.M.—TRAYMORE, TRAYMORE ROOM

Chairman: H. W. Fritts, Jr.

1:30 **1349.** Pulmonary vein-left atrial junction; anatomy and response to various stimuli. M. ELIAKIM* AND D. M. AVIADO. *Hadassah Univ. Hosp., Jerusalem, and Univ. of Pennsylvania.*

1:45 **1350.** Influence of left atrial pressure on pulmonary hypertensive response to concentrated saline. R. C. READ,* J.

A. VICK* AND M. W. MEYER.* *VA Hosp. and Univ. of Minnesota.*

2:00 **1351.** Chronic pulmonary vascular pressure and anatomical alterations following pulmonary embolism. H. WEISBERG,* J. LOPEZ,* J. FRIDMAN,* R. PICK AND L. N. KATZ. *Michael Reese Hosp.*

2:15 **1352.** Effect of posture and venous return on pulmonary capillary blood flow. A. NAIMARK* AND K. WASSERMAN. *Univ. of California, San Francisco.*

2:30 **1353.** Effects of atelectasis upon pulmonary blood flow. W. H. HARDESTY,* J. C. SCHUDER,* H. MACVAUGH* AND W. S. BLAKEMORE. *Univ. of Pennsylvania.*

2:45 **1354.** Effects of acute atelectasis on pulmonary circulation. A. H. NIDEN, B. BURROWS AND W. R. BARCLAY. *Univ. of Chicago.*

3:00 **1355.** Pulmonary vasomotor response to 5-OH-tryptamine and acetylcholine in calves. H. KUIDA, A. M. BROWN,* J. L. THORNE,* R. L. LANGE* AND H. H. HECHT. *Univ. of Utah Coll. of Med.*

3:15 **1356.** Effects of CO_2 breathing on pulmonary hemodynamics. L. M. LINDE,* D. H. SIMMONS, N. LEWIS* AND R. C. POWELL.* *UCLA and VA Ctr.*

3:30 **1357.** Induced alterations in distribution of pulmonary blood flow. M. A. TULLER,* D. E. LEHR* AND A. P. FISHMAN. *Columbia Univ.*

3:45 **1358.** Some effects of heart disease on distribution of pulmonary blood flow in man. P. HUGH-JONES,* C. T. DOLLERY* AND J. B. WEST.* *Med. Res. Council and Postgrad. Med. Sch., Hammersmith Hosp., London, England.*

4:00 **1359.** Retrograde and forward perfusion of intact dog lungs. H. B. KEITH,* L. E. RADER, JR.* AND G. S. CAMPBELL. *VA Hosp. and Univ. of Oklahoma Med. Ctr.*

4:15 **1360.** Acute and chronic adjustments to controlled systemic-pulmonary communications. A. M. RUDOLPH, R. J. GOLLINKO* AND N. L. GOOTMAN. *Albert Einstein Coll. of Med.*

133. Receptors

WED. P.M.—TRAYMORE, ROSE ROOM

Chairman: K. T. Brown

1:30 **1361.** Inhibition and excitation of single neurons of olfactory bulb. R. VON BAUMGARTEN,* J. D. GREEN AND M. MANCIA.* *UCLA.*

1:45 **1362.** Responses from olfactory bulb in unanesthetized, conscious monkey. J. R. HUGHES AND J. A. MAZUROWSKI.* *Meyer Hosp., Buffalo Univ. Med. Sch.*

2:00 **1363.** Gustatory nerve responses and preference behavior for amino acids in rat. B. P. HALPERN,* R. A. BERNARD* AND M. R. KARE. *Cornell Univ.*

2:15 **1364.** Olfactory neural and epithelial responses in frog. M. M. MOZELL.* *Florida State Univ.*

2:30 **1365.** Freely chosen salt intake and eating behavior in rats. L. M. GELLER,* H. KAUNITZ AND R. E. JOHNSON.* *Columbia Univ.* (Pathol.)

2:45 **1366.** Depression and potentiation of generator potential in a pacinian corpuscle by repetitive stimulation; afterpotentials. S. J. SOCOLAR* AND M. SATO.* *Columbia Univ.*

3:00 **1367.** Effects of temperature on generator potential of a pacinian corpuscle. N. ISHIKO* AND W. R. LOEWENSTEIN. *Columbia Univ.*

3:15 **1368.** Positive response to small spot illumination in cyprinid fish retina. K. WATANABE* AND T. TOSAKA.* *Tokyo Women's Med. Coll.*

3:30 **1369.** Receptive fields of ganglion cells in goldfish retina. M. L. WOLBARSHT,* H. G. WAGNER AND E. F. MACNICHOL, JR. *Naval Med. Res. Inst. and Johns Hopkins Univ.*

3:45 **1370.** Initiation of spike potentials in insect compound eye. K. NAKA AND E. EGUCHI. *Kyushu Univ., Fukuoka, Japan.*

4:00 **1371.** Possible photoreceptors in 6th ganglion of crayfish. K. UCHIZONO. *Univ. of Utah.*

4:15 **1372.** Lack of carotid sinus or carotid body effect in cerebral synaptic inhibition by serotonin. J. M. RODRIGUEZ,* E. R. HART AND A. S. MARRAZZI. *VA Res. Labs. in Neuropsychiat., Pittsburgh.*

4:30 **1373.** Unmyelinated fibers in carotid nerve of cat. C. EYZAGUIRRE, K. UCHIZONO* AND J. LEWIN.* *Univ. of Utah.*

134. Blood I

WED. P.M.—TRAYMORE, BELVEDERE ROOM

Chairman: M. M. Guest

1:30 **1374.** Effect of fasting and bile retention with inanition on bone marrow cellularity and sodium and potassium levels in rabbit. J. W. ARCHDEACON, W. R. MARKESBERY* AND B. R. BINFORD.* *Univ. of Kentucky.*

1:45 **1375.** In vitro effect of insulin and thyroxine on incorporation of amino acids into protein of rabbit bone marrow. T. F. NECHELES.* *Argonne Cancer Res. Hosp. and Univ. of Chicago.*

2:00 **1376.** Transfer of iron from synthetic iron-binding chelates to rabbit reticulocytes. J. V. PRINCIOTTO, G. SHASHATY,* E. J. ZAPOLSKI* AND M. RUBIN.* *Georgetown Univ. Sch. of Med. and Dent.*

2:15 **1377.** In vivo heme synthesis in rabbits. W. D. NOYES* AND C. A. FINCH. *Univ. of Washington Sch. of Med.*

2:30 **1378.** Chemical modification of properties of chlorocruorin and hemocyanin. C. MANWELL.* *Univ. of Illinois.*

2:45 **1379.** Interaction of Hg^{++} with human erythrocytes. R. I. WEED.* *Univ. of Rochester Med. Sch.*

3:00 **1380.** Effect of batyl alcohol on hematopoiesis in rhesus monkey. F. E. NEWSOME,* A. H. TUTTLE,* C. H. JACKSON* AND R. R. OVERMAN. *Univ. of Tennessee.*

3:15 **1381.** Recrystallization temperatures of some components of blood after rapid freezing. B. J. LUYET, P. M. GEHENIO* AND G. RAPATZ. *American Fndn. for Biol. Res.*

3:30 **1382.** Improved scheme for chromatographic purification of human urinary erythropoietic stimulating factor. J. WINKERT,* A. S. GORDON AND A. RAUCH.* *New York Univ. and New York Med. Coll.*

Biochemistry Society Sessions—Wednesday, 9:00 a.m.

135. Nucleic Acid Chemistry I

WED. A.M.—CONVENTION HALL, BALLROOM

Chairman: W. E. Cohn

9:00 **1383.** A procedure for the analysis of components of ribonucleic acids. STANISLAW L. MROZEK* AND FRANK WORTHINGTON ALLEN. *Univ. of California Sch. of Med.*

9:15 **1384.** Partial pancreatic ribonuclease digests of ribonucleic acid from yeast and from tobacco mosaic virus. G. W. RUSHIZKY. *Natl. Cancer Inst.*

9:30 **1385.** Alkaline phosphatase from E. coli and its use for RNA sequence studies. R. J. HILMOE* AND D. R. HARKNESS.* *Natl. Insts. of Health.*

9:45 **1386.** Amine-catalyzed hydrolysis of periodate-oxidized nucleoside residues: application to RNA sequence analysis and 5′ nucleotide cleavage. WALDO E. COHN AND J. X. KHYM.* *Oak Ridge Natl. Lab.*

10:00 **1387.** Nearest neighbor sequences in various DNA's. MORTON SWARTZ,* THOMAS TRAUTNER* AND JOHN JOSSE.* *Stanford Univ.*

10:15 **1388.** Frequency of nucleotide sequences in DNA. J. H. SPENCER* AND ERWIN CHARGAFF. *Columbia Univ.*

10:30 **1389.** Rapid separation of adenosine nucleotides, and nucleotides and nucleosides from RNA. N. G. ANDERSON, M. L. BARBER* AND SISTER FRANCIS C. LADD.* *Oak Ridge Natl. Lab., UCLA and Catholic Univ.* (Physiol.)

10:45 **1390.** Action of pancreatic deoxyribonuclease on thymidine, deoxycytidine and deoxyadenosine polynucleotides. R. K. RALPH,* R. A. SMITH AND H. G. KHORANA. *Univ. of Wisconsin.*

11:00 **1391.** A DNA endonuclease from *E. coli*. I. R. LEHMAN,* G. ROUSSOS* AND E. A. PRATT.* *Stanford Univ.*

11:15 **1392.** Chromatographic separation and characterization of ribonucleases in spleen and liver. MARY E. MAVER AND ANTOINETTE E. GRECO.* *Natl. Cancer Inst.*

11:30 **1393.** A nuclease from mung-bean sprouts. SHAN-CHING SUNG* AND M. LASKOWSKI, SR. *Marquette Univ. Sch. of Med.*

136. Electron Transport I

WED. A.M.—CONVENTION HALL, ROOM H

Chairman: D. E. Green

9:00 **1394.** Inhibition of the mammalian succinoxidase system by a factor isolated in conjunction with lipopolysaccharides from Pasteurella tularensis and Serratia marcescens. HAROLD A. NEUFELD, RONALD L. COLEMAN* AND DAVID STEFANYE.* *U.S. Army Chem. Corps.*

9:15 **1395.** Use of quinones as probes of the electron transport chain. E. JACOBS* AND F. L. CRANE. *Dartmouth Coll. and Purdue Univ.*

9:30 **1396.** Enzymatic formation of a naphthotocopherol-like intermediate from vitamin K_1. P. J. RUSSELL* AND A. F. BRODIE. *Harvard Med. Sch.*

9:45 **1397.** Prosthetic group of rabbit liver aldehyde oxidase. K. V. RAJAGOPALAN,* IRWIN FRIDOVICH AND PHILIP HANDLER. *Duke Univ.*

10:00 **1398.** Non-heme iron (NHI) components of electron transport enzymes and submitochondrial fractions (SF). WILLIAM LEE* AND HELMUT BEINERT. *Univ. of Wisconsin.*

10:15 **1399.** A role for non-heme iron in mitochondrial electron transport. KENNETH A. DOEG. *Univ. of Wisconsin.*

10:30 **1400.** Isolation and properties of a mitochondrial DPNH-coenzyme Q reductase. A. G. HAAVIK* AND Y. HATEFI.* *Univ. of Wisconsin.*

10:45 **1401.** Particulate respiratory chain system. LUCILE SMITH AND DAVID C. WHITE.* *Dartmouth Med. Sch.*

11:00 **1402.** Electron transport studies in the chemoautotroph Ferrobacillus ferrooxidans. BARBARA A. BLAYLOCK* AND ALVIN NASON. *Johns Hopkins Univ.*

137. Carbohydrate Metabolism IV

WED. A.M.—CONVENTION HALL, STAGE

Chairman: K. Meyer

9:00 **1403.** Sulfocarbohydrate metabolism. A. A. BENSON AND I. SHIBUYA.* *Pennsylvania State Univ.*

9:15 **1404.** In vitro stimulation by DPN and L-glutamine of sulfate incorporation into mast cell tumor heparin. LEONARD SPOLTER* AND WALTER MARX. *Univ. of Southern California.*

9:30 **1405.** Vitamin A and net synthesis of mucopolysaccharides. GEORGE WOLF AND ANTONIO MORETTI.* *Univ. of Illinois and Univ. of Pavia.*

9:45 **1406.** Sulfate transfer specificity for chondroitin sulfates in tissue preparations. EIICHI HASEGAWA,* AXEL DELBRÜCK* AND FRITZ LIPMANN. *Rockefeller Inst.*

10:00 **1407.** Synthesis of chondroitinsulfuric acid-protein complex by cartilage cells. F. K. THORP* AND A. DORFMAN. *Univ. of Chicago.*

10:15 **1408.** Influence of the thyroid gland on metabolism of mucopolysaccharides in skin of rats. SARA SCHILLER. *Univ. of Chicago.*

10:30 **1409.** Hormonal control of mucopolysaccharide metabolism. E. A. DAVIDSON, W. SMALL* AND P. PERCHEMLIDES.* *Duke Univ.*

10:45 **1410.** Properties of chondroitin sulfate C. MARTIN B. MATHEWS. *Univ. of Chicago.*

11:00 **1411.** Identification of acid mucopolysaccharides by glass fiber chromatography. E. R. DALFERES, JR.* AND G. S. BERENSON.* *Louisiana State Univ.*

11:15 **1412.** Continuous-flow electrophoresis for separation of polysaccharide-containing material from biological sources. O. GABRIEL* AND C. PALLAVICINI.* *Columbia Univ. and Natl. Insts. of Health.* (Nutr.)

11:30 **1413.** Connective tissue changes in aortas from pigs on a copper-deficient diet. NORMAN WEISSMAN, GEORGE S. SHIELDS* AND WILLIAM H. CARNES. *Univ. of Utah.*

11:45 **1414.** Production of lathyrism in chick embryos by hydrazides. DAVID J. SMITH.* *New York State Dept. of Health.*

138. Amino Acid Metabolism I

WED. A.M.—CONVENTION HALL, ROOM F

Chairman: S. Ratner

9:00 **1415.** Amino acid changes in mice with grafted homologous bone marrow. ARTHUR L. KRETCHMAR* AND CHARLES C. CONGDON.* *Oak Ridge Natl. Labs.*

9:15 **1416.** Adaptive characteristics of urea cycle enzymes in the rat. ROBERT T. SCHIMKE.* *Natl. Insts. of Health.*

9:30 **1417.** Lysine synthesis and biochemical evolution: diaminopimelic decarboxylase in higher plants. YOSHIRO SHIMURA* AND HENRY J. VOGEL. *Rutgers State Univ.*

9:45 **1418.** Lysine biosynthesis with mutant yeasts. JAMES R. MATTOON* AND TERRY A. MOSHIER.* *Univ. of Nebraska.*

10:00 **1419.** Enzymic reduction of α-aminoadipic acid (AAA) by yeast; relation to lysine biosynthesis. HARRY P. BROQUIST, RUSSELL L. LARSON* AND WILLIAM E. SANDINE.* *Univ. of Illinois.*

10:15 **1420.** Metabolism of hydroxylysine by Streptococcus faecalis. F. R. LEACH,* W. G. SMITH* AND C. M. TSUNG.* *Oklahoma State Univ.*

10:30 **1421.** Isolation, characterization and metabolism of urinary oligopeptides. EDWARD E. HALEY,* DONALD L. BUCHANAN AND ROMAN T. MARKIW.* *VA Hosp. and Yale Univ.*

10:45 **1422.** Excretion patterns of precursors (ALA and PBG) and porphyrins in experimental porphyria. LYNN D. ABBOTT, JR. AND SUSAN G. RUDOLPH.* *Med. Coll. of Virginia.*

11:00 **1423.** Biochemical observations in ketoaciduria, a variant of maple syrup urine disease. M. D. MORRIS, B. D. LEWIS AND P. D. DOOLAN. *U. S. Naval Hosp.*

139. Effects of Hormones on Metabolism

WED. A.M.—CONVENTION HALL, ROOM G

Chairman: A. White

9:00 **1424.** Hormonal effects on urinary excretion of ingested α-aminoisobutyric acid-N-15 by the dog. H. C. CHOITZ* AND O. H. GAEBLER. *Edsel B. Ford Inst. for Med. Res.*

9:15 **1425.** Influence of androgens on activity of amino acid activating enzymes. CHARLES D. KOCHAKIAN, RYO TANAKA* AND JOHN HILL.* *Univ. of Alabama Med. Ctr.*

9:30 **1426.** Hormonal effects on mitochondria from rat ventral prostate. JEAN C. EDELMAN* AND HERBERT BRENDLER.* *New York Univ. Med. Sch.*

9:45 **1427.** Interaction of cortisol with components of lymphatic tissue. W. K. BRUNKHORST* AND E. L. HESS. *Worcester Fndn. for Exper. Biol.*

10:00 **1428.** Inhibition of B_6-enzymes by free and conjugated estrogens. MERLE MASON AND LAVERNE SCHIRCH.* *Univ. of Michigan.*

10:15 **1429.** Acid soluble and insoluble sulfhydryl of extracts of uterus of ovariectomized rats after estradiol. D. B. MCNAIR SCOTT AND A. M. PAKOSKEY.* *Univ. of Pennsylvania.*

10:30 **1430.** Effect of ACTH and cortisone upon adrenal adenine nucleotide metabolizing enzymes. R. HILF,* C. BREUER* AND A. BORMAN.* *Squibb Inst. for Med. Res.*

10:45 **1431.** Estrogen dependent nicotinamide-adenine dinucleotide transhydrogenase. D. D. HAGERMAN, C. A. VILLEE AND F. M. WELLINGTON.* *Harvard Med. Sch.*

11:00 **1432.** Some interactions of enzymes, steroids, and pyridine nucleotides. C. A. VILLEE, J. M. LORING* AND J. M. SPENCER.* *Harvard Med. Sch.*

11:15 **1433.** Effect of steroids on glucose oxidation and TPNH generation by adrenal homogenates. ETHEL A. TSUTSUI,* PAUL REICH* AND PAUL A. MARKS. *Columbia Univ.*

11:30 **1434.** Steroid hormone and diethylstilbestrol effects on oxidation of retinene (vitamin A_1 aldehyde [*all trans.*]). T. D. ELDER* AND Y. J. TOPPER. *Natl. Insts. of Health.*

11:45 **1435.** An in vitro action of gonadotropin. JOHN M. MARSH,* NORMAN R. MASON* AND KENNETH SAVARD. *Univ. of Miami Sch. of Med.*

140. Protein Chemistry III

WED. A.M.—AMBASSADOR, RENAISSANCE ROOM

Chairman: H. Neurath

9:00 **1436.** Titration curves for creatinekinase. W. A. DA COSTA,* J. R. SPARKS* AND F. FRIEDBERG. *Howard Univ. Med. Sch.*

9:15 **1437.** Microstructure of myeloperoxidase. JULIUS SCHULTZ, HERMAN SHMUKLER* AND ANDREW YOUNG.* *Hahnemann Med. Coll.*

9:30 **1438.** Properties of gastricsin and human pepsin. KUEN-I TANG* AND JORDAN TANG.* *Oklahoma Med. Res. Inst. and Univ. of Oklahoma.*

9:45 **1439.** Effect of denaturation on the chromatography of pepsin. F. W. PAIRENT* AND M. B. WILLIAMSON. *Loyola Univ. Sch. of Med.*

10:00 **1440.** Reduction of the disulfide groups of native pepsin. OLGA O. BLUMENFELD.* *Rockefeller Inst.*

10:15 **1441.** Thiol groups of ficin. IRVIN E. LIENER. *Univ. of Minnesota.*

10:30 **1442.** Half-cystine plus cysteine content of papain. A. N. GLAZER. *Univ. of Utah Coll. of Med.*

10:45 **1443.** Fractionation of ricin into proteins exhibiting selective toxic action. B. R. DAS GUPTA,* G. R. WALLER* AND J. B. CORCORAN.* *Oklahoma State Univ.*

11:00 **1444.** Peptide sequences in trypsinogen. K. A. WALSH,* D. L. KAUFFMAN* AND H. NEURATH. *Univ. of Washington.*

11:15 **1445.** Difference spectral and configurational changes of trypsinogen in acid and neutral solutions. LAWRENCE B. SMILLIE* AND CYRIL M. KAY.* *Univ. of Alberta.*

11:30 **1446.** Some factors effecting the sedimentation of α-chymotrypsin. JOSEPH H. LANG* AND RICHARD ARNOLD.* *Univ. of Pittsburgh.*

11:45 **1447.** Chemical structure of pancreatic procarboxypeptidase A. H. NEURATH, J. R. BROWN,* R. N. GREENSHIELDS,* P. J. KELLER AND M. YAMASAKI.* *Univ. of Washington.*

141. Active Transport

WED. A.M.—AMBASSADOR, VENETIAN ROOM

Chairman: R. E. Davies

9:00 **1448.** Lactose and transit of calcium and strontium across rat intestine. R. H. WASSERMAN, A. N. TAYLOR* AND C. L. COMAR. *New York State Vet. Coll.*

9:15 **1449.** Interaction of phenyl nitrogen compounds and acetylcholine on rubidium efflux from frog sartorii. RAYMOND R. WALSH AND FRANCES S. URTON.* *Univ. of Colorado.*

9:30 **1450.** Effects of ouabain on incorporation of P^{32} into phospholipids. ELWOOD TITUS, DORIS NICHOLLS* AND JULIAN KANFER.* *Natl. Insts. of Health.*

9:45 **1451.** A microsomal adenosinetriphosphatase in Ehrlich ascites carcinoma cells. DONALD F. HOELZEL WALLACH* AND DONNA ULLREY.* *Harvard Univ.*

10:00 **1452.** Active transport by gastric mucosa. J. G. FORTE,* A. H. NAUSS,* M. C. NEVILLE* AND R. E. DAVIES. *Univ. of Pennsylvania.*

10:15 **1453.** Influence of ions on intestinal sugar transport. IVAN BIHLER* AND ROBERT K. CRANE. *Washington Univ.*

10:30 **1454.** Thiogalactoside acetylase. IRVING ZABIN AND ADAM KEPES.* *Pasteur Inst.*

10:45 **1455.** Relations between uptake of free amino acids by cells and their incorporation into protein. THOMAS R. RIGGS AND LOIS M. WALKER.* *Univ. of Michigan.*

11:00 **1456.** Action of pyridoxal phosphate and related

agents on uptake of amino acids by Ehrlich ascites cells. D. L. OXENDER* AND M. ROYER.* *Univ. of Michigan.*

11:15 **1457.** Uptake of α-aminoisobutyric acid-1-C^{14} (AIB) by rat thymic lymphocytes. MELVIN BLECHER.* *Albert Einstein Coll. of Med.*

11:30 **1458.** Effect of insulin on transfer of α-aminoisobutyric acid. HITOSHI AKEDO* AND HALVOR N. CHRISTENSEN. *Univ. of Michigan.*

11:45 **1459.** Distribution of urea between tissues and plasma. E. HALAC, JR.* *New York Univ.*

142. Steroid Metabolism II

WED. A.M.—AMBASSADOR, SURF ROOM

Chairman: L. L. Engel

9:00 **1460.** Metabolism of progesterone and 11-α-hydroxyprogesterone by adrenal cells in tissue culture. D. PERLMAN,* NANCY A. GIUFFRE* AND S. C. PAN.* *Squibb Inst. for Med. Res.*

9:15 **1461.** Metabolism of steroids by mouse testicular embryonal carcinoma. MELVIN J. BRYSON* AND MAX L. SWEAT. *Univ. of Utah.*

9:30 **1462.** Steroid Δ^1-dehydrogenase. M. HAYANO, V. STEFANOVIC,* Y. KUROSAWA,* M. GUT* AND R. I. DORFMAN. *Worcester Fndn. for Exper. Biol.*

9:45 **1463.** Inhibition of corticoid production in rat adrenal homogenates by diphosphopyridine nucleotide and its reversal by ascorbate and other substances. SEYMOUR B. KORITZ.* *Univ. of Pittsburgh.*

10:00 **1464.** 17-Hydroxypregnenolone as a precursor for cortisol. IRVING WELIKY* AND LEWIS L. ENGEL. *Huntington Hosp. and Harvard Med. Sch.*

10:15 **1465.** Metabolism of cortisol by subcellular fractions of rat liver. FRANK DE VENUTO AND ULRICH WESTPHAL. *U.S. Army Med. Res. Lab., Ft. Knox.*

10:30 **1466.** Utilization of adrenal gland cholesterol for synthesis of cortisol by the normal and ACTH-treated guinea pig. H. WERBIN AND I. L. CHAIKOFF. *Univ. of California.*

10:45 **1467.** In vitro metabolism of steroids in the rat kidney. VIRENDRA B. MAHESH.* *Med. Coll. of Georgia.*

11:00 **1468.** Polyanion requirement of liver homogenates. WILBERT GAMBLE* AND LEMUEL D. WRIGHT. *Cornell Univ. Grad. Sch. of Nutrition.*

Biochemisty Society Sessions—Wednesday, 1:30 p.m.

143. Protein Metabolism III

WED. P.M.—CONVENTION HALL, BALLROOM

Chairman: P. Zamecnik

1:30 **1469.** Use of bentonite in purification of ribonucleoprotein. MARY L. PETERMANN AND AMALIA PAVLOVEC.* *Sloan-Kettering Inst. for Cancer Res.*

1:45 **1470.** Chromatography of microsomal and soluble ribonucleoprotein of rat liver. E. A. PETERSON AND E. L. KUFF. *Natl. Insts. of Health.*

2:00 **1471.** An amino acid incorporating system purified with Sephadex. J. WENDELL DAVIS* AND EDSEL T. BUCOVAZ.* *St. Louis Univ.*

2:15 **1472.** Separation of amino acid-specific "soluble" ribonucleic acids by partition chromatography. GEORGE A. EVERETT,* SUSAN H. MERRILL* AND ROBERT W. HOLLEY. *Agricul. Res. Service and Cornell Univ.*

2:30 **1473.** Separation of yeast amino acid-acceptor ribonucleic acids by countercurrent distribution. B. P. DOCTOR* AND JEAN APGAR.* *U.S. Plant, Soil and Nutr. Lab. and Cornell Univ.*

2:45 **1474.** Fractionation of S-RNA from E. coli. ARTHUR SAPONARA* AND ROBERT M. BOCK. *Univ. of Wisconsin.*

3:00 **1475.** Guanosine triphosphate degradation during protein synthesis from amino acid S-RNA. GEORGE WEBSTER. *Ohio State Univ.*

3:15 **1476.** Enzymatic transfer of C^{14}-leucine from C^{14}-leucyl-RNA to ribosomes. J. BISHOP* AND R. SCHWEET. *Univ. of Kentucky.*

3:30 **1477.** Specificity of amino acid activating enzymes. ROBERT B. LOFTFIELD AND ELIZABETH ANN EIGNER.* *Massachusetts Gen. Hosp. and Harvard Med. Sch.*

3:45 **1478.** Terminal nucleotide sequences in amino acid-acceptor RNA. U. LAGERKVIST,* P. BERG, M. DIECKMANN* AND F. W. PLATT.* *Stanford Univ.*

4:00 **1479.** Base composition and transition temperature of amino acid acceptor ribonucleic acids. MARIO A. MARINI.* *Northwestern Univ.* (Physiol.)

4:15 **1480.** Investigations on role of soluble RNA in protein synthesis. DAVID STONE AND SHARAD JOSHI.* *Worcester Fndn. for Exper. Biol.*

144. Electron Transport II

WED. P.M.—CONVENTION HALL, ROOM H

Chairman: B. Chance

1:30 **1481.** Effect of 2-amino-1-naphthol on cytochrome c. SIDNEY BELMAN,* WALTER TROLL AND NORTON NELSON. *New York Univ.*

1:45 **1482.** Properties of c-type cytochromes of *Chromatium.* ROBERT G. BARTSCH.* *Brandeis Univ.*

2:00 **1483.** Role of cytochrome b in electron transport. ROBERT GOLDBERGER,* ALISON M. PUMPHREY* AND ARCHIE L. SMITH.* *Univ. of Wisconsin.*

2:15 **1484.** Properties of an electron transport particle from S. aureus. HARRY W. TABER* AND MARTIN MORRISON. *Univ. of Rochester.*

2:30 **1485.** Oxidation-reduction potential of cytochrome a. K. MINNAERT. *Univ. of Amsterdam.*

2:45 **1486.** Kinetics of oxidation of ferrocytochrome c by cytochrome c oxidase in air. E. T. MCGUINNESS* AND W. W. WAINIO. *Rutgers State Univ.*

3:00 **1487.** Preparation of cytochrome oxidase from beef heart mitochondria. D. E. GRIFFITHS* AND DAVID C. WHARTON.* *Univ. of Wisconsin.*

3:15 **1488.** Reaction of copper in cytochrome oxidase. TAKASHI YONETANI.* *Univ. of Pennsylvania.*

3:30 **1489.** Reduction of cytochrome a and a_3 preparations. W. B. ELLIOTT. *Univ. of Buffalo.*

3:45 **1490.** Influence of ionic strength and cytochrome c concentration on oxidation of ferrocytochrome c by cytochrome oxidase. HELEN CONRAD AND A. R. WASSERMAN. *Univ. of Pennsylvania.*

145. Carbohydrate Metabolism V

WED. P.M.—CONVENTION HALL, STAGE

Chairman: J. T. Park

1:30 **1491.** Synthesis of n-acyl amino acid derivatives of d-glucosamine. FRANCES M. FINN* AND DAVID PLATT.* *Univ. of Pittsburgh.*

1:45 **1492.** Stereospecific synthesis of muramic acid and related compounds. YOSHIO MATSUSHIMA* AND JAMES T. PARK. *Vanderbilt Univ.*

2:00 **1493.** Nucleotides containing α,ϵ-diaminopimelic acid from *E. coli*. DONALD G. COMB.* *Massachusetts Gen. Hosp. and Harvard Univ.*

2:15 **1494.** Fluorometric assay of sialic acid. HELEN H. HESS.* *McLean Hosp. and Harvard Med. Sch.*

2:30 **1495.** Comparison of composition of submaxillary and bile mucins from several animal species. Y. HASHIMOTO,* S. TSUIKI* AND WARD PIGMAN. *Univ. of Alabama and New York Med. Coll.*

2:45 **1496.** Isolation of n-acetylneuraminic acid from a polysaccharide obtained from a Citrobacter freundii microorganism. G. T. BARRY AND F. P. CHEN.* *Univ. of Tennessee.*

3:00 **1497.** Isolation of nucleotide-oligosaccharides containing sialic acid. G. W. JOURDIAN,* F. SHIMIZU* AND S. ROSEMAN. *Univ. of Michigan.*

3:15 **1498.** Biosynthesis of n-acetylneuraminic acid. L. WARREN AND H. FELSENFELD.* *Natl. Insts. of Health.*

3:30 **1499.** Enzymatic synthesis of 3-O-β-D-galactopyranosyl-n-acetyl-d-glucosamine. MARY CATHERINE GLICK* AND FRIEDRICH ZILLIKEN. *Univ. of Pennsylvania.*

3:45 **1500.** Action of purified liver extracts on a hyaluronate trisaccharide. BERNARD WEISSMANN AND JERALD TORNHEIM.* *Univ. of Illinois.*

4:00 **1501.** Degradation of oligosaccharides containing uronic acid and hexosamine with alkaline borate. J. A. CIFONELLI. *LaRabida Inst. and Univ. of Chicago.*

4:15 **1502.** Mucopolysaccharide depolymerization studies with radioactive cyanide. LESLIE ROBERT* AND RICHARD J. WINZLER. *Univ. of Illinois.*

146. Amino Acid Metabolism II

WED. P.M.—CONVENTION HALL, ROOM F

Chairman: G. Cantoni

1:30 **1503.** Effect of N^5-formyltetrahydrofolate on choline methyl group biosynthesis in Neurospora crassa. JULIAN R. RACHELE. *Cornell Univ.*

1:45 **1504.** Biosynthesis of choline in rat liver homogenates IBERT C. WELLS AND CHARLES N. REMY. *State Univ. of New York and VA Hosp.*

2:00 **1505.** Metabolism of dimethyl-β-propiothetin by an anaerobe. CONRAD WAGNER.* *Natl. Insts. of Health.*

2:15 **1506.** Methionine methyl group oxidation by rat liver. EDWARD J. KUCHINSKAS. *State Univ. of New York.*

2:30 **1507.** Production of single carbons from glycine. ELAINE B. NEWMAN* AND BORIS MAGASANIK. *Harvard Med. Sch.*

2:45 **1508.** Conversion of glycine, glyoxalate and glycolate to oxalate in the pyridoxine-deficient rat. M. E. CORYELL,* H. B. O'REAR* AND W. K. HALL. *Med. Coll. of Georgia.*

3:00 **1509.** Purification and properties of s-adenosyl-1-homocysteine. JOHN A. DUERRE.* *Argonne Natl. Lab.*

3:15 **1510.** A new intermediate of methionine biosynthesis. ALLAN R. LARRABEE* AND JOHN M. BUCHANAN. *MIT.*

3:30 **1511.** Biosynthesis of seleno-compounds from inorganic selenium by the sheep. IRENE ROSENFELD. *Univ. of Wyoming.*

3:45 **1512.** Metabolism of S^{35}-(dichlorovinyl)-1-cysteine in the calf. M. O. SCHULTZE AND R. F. DERR.* *Univ. of Minnesota.*

4:00 **1513.** Synthesis of p-chlorophenyl-s-glutathione and its fate in the animal body. ISAAC H. MILLER, JR.* AND HAROLD D. WEST. *Meharry Med. Coll.*

147. Coenzyme Metabolism I

WED. P.M.—CONVENTION HALL, ROOM G

Chairman: F. Huennekens

1:30 **1514.** Folic acid precursors of human erythrocytes. KAZUO IWAI,* PHOEBE M. LUTTNER* AND G. TOENNIES. *Inst. for Cancer Res.*

1:45 **1515.** Utilization of purines in biosynthesis of pteridine ring of folic acid. ELLIOTT SHAW AND ENIO VIEIRA.* *Tulane Univ.*

2:00 **1516.** Interconversion of prefolic acid A and tetrahydrofolic acid. KENNETH O. DONALDSON AND JOHN C. KERESZTESY. *Natl. Insts. of Health.*

2:15 **1517.** Purification and properties of the formate activating-enzyme from human erythrocytes. J. R. BERTINO,* B. SIMMONS* AND D. M. DONOHUE.* *Univ. of Washington and King County Blood Bank.*

2:30 **1518.** N^{10}-formyltetrahydrofolic acid, its occurrence in mouse leukemic cells and synthesis by liver extracts. B. T. KAUFMAN,* L. W. LAW AND M. SILVERMAN. *Natl. Insts. of Health.*

2:45 **1519.** Thymus gland dihydrofolic acid reductase. RAVINDRA NATH* AND DAVID M. GREENBERG. *Univ. of California.*

3:00 **1520.** Dihydrofolic reductase. C. K. MATHEWS* AND F. M. HUENNEKENS. *Univ. of Washington.*

3:15 **1521.** Direct spectrophotometric evidence for oxidation of tetrahydrofolate during enzymatic synthesis of thymidylate. ALBERT J. WAHBA* AND MORRIS FRIEDKIN. *Tufts Univ.*

3:30 **1522.** Biotin oxidation in a bacterial enzyme system. J. E. CHRISTNER,* J. L. FOOTE* AND M. J. COON. *Univ. of Michigan.*

3:45 **1523.** Effect of thiouracil on accumulation of injected Co-60 cyanocobalamin in rabbits and other animals. HAROLD L. ROSENTHAL. *Washington Univ.*

4:00 **1524.** Isolation and characterization of a porcine intrinsic factor-vitamin B_{12} complex. WILLIAM W. BROMER AND EDWIN O. DAVISSON.* *Lilly Res. Labs.*

148. Proteases

WED. P.M.—AMBASSADOR, "22" CLUB

Chairman: D. G. Doherty

1:30 **1525.** Kinetic studies with carboxypeptidase B. EDITH C. WOLFF* AND J. E. FOLK. *Natl. Insts. of Health.*

1:45 **1526.** Intracellular carboxypeptidase (cathepsin IV). L. M. GREENBAUM* AND R. SHERMAN.* *State Univ. of New York.*

2:00 **1527.** Preparation, crystallization and characterization of an estero-proteolytic enzyme from porcine pancreas. JOHN C. HARTNETT* AND ERLAND C. GJESSING. *Univ. of Vermont.*

2:15 **1528.** Pancreatic collagenase. J. C. HOUCK AND Y. M. PATEL.* *Children's Hosp. and Georgetown Med. Sch.*

2:30 **1529.** Salmon endopeptidases found different from mammalian enzymes. C. BRADFORD CROSTON* AND JOHN E. HALVER. *U.S. Fish and Wildlife Service.*

2:45 **1530.** Alkaline proteinase of *Aspergillus oryzae*. GEORGE KALNITSKY AND LEONARD FRIEDMAN.* *Univ. of Iowa.*

3:00 **1531.** Papain catalyzed synthesis of an amide bond. DONALD M. KIRSCHENBAUM.* *State Univ. of New York.*

3:15 **1532.** Electrophoretic demonstration of specific enzyme-substrate complex between pepsin and serum albumin. JOHN R. CANN AND JACK A. KLAPPER, JR.* *Univ. of Colorado.*

3:30 **1533.** Promotion of chymotrypsin activity by indole. ROBERT J. FOSTER. *Washington State Univ.*

3:45 **1534.** Inhibition of chymotrypsin and other hydrolytic enzymes by sodium salicylate. EDWARD H. FRIEDEN. *Boston Dispensary.*

4:00 **1535.** Enzymatic properties of poly-DL-t-leucyl-α-chymotrypsin. R. R. BECKER, O. A. DARLING* AND R. G. ONA.* *Oak Ridge Natl. Lab. and Columbia Univ.*

149. Clinical Chemistry

WED. P.M.—AMBASSADOR, ROTUNDA

Chairman: W. Sperry

1:30 **1536.** Serum leucineaminopeptidase levels and their significance. F. J. BEHAL* AND C. B. KANAVAGE.* *Med. Coll. of Georgia.*

1:45 **1537.** Effect of zymosan on serum transaminases. GERARD A. FLEISHER AND KHALIL G. WAKIM. *Mayo Clinic and Mayo Fndn.*

2:00 **1538.** Relation of enzymatic activity to low density lipoprotein. S. H. LAWRENCE AND P. J. MELNICK.* *VA Hosp., San Fernando, and Univ. of California.* (Pathol.)

2:15 **1539.** Heterogeneity of human serum cholinesterase and metabutethaminesterase at 23°C. CHARLES E. BECKER.* *Amer. Dental Assoc., Chicago.*

2:30 **1540.** Chemical studies of toxemia of pregnancy. M. X. SULLIVAN. *Georgetown Univ.*

2:45 **1541.** Measurement of blood glucose by a coupled glucose oxidase-catalase enzyme system. F. WILLIAM SUNDERMAN, JR. AND F. WILLIAM SUNDERMAN. *Jefferson Med. Coll.*

3:00 **1542.** Colorimetric detection of carriers of galactosemia based on thionicotinamide diphosphopyridine nucleotide (TNDPN) reduction. J. H. NORDIN* AND R. K. BRETTHAUER.* *Michigan State Univ.*

3:15 **1543.** Turbidity of aqueous dilutions of pathological sera. ELLA H. FISHBERG. *Beth Israel Hosp.*

3:30 **1544.** Determination of bile acid excretion in man. R. S. ROSENFELD. *Sloan-Kettering Inst.*

3:45 **1545.** Standardization of determination of urobilinogen as urobilinogen-aldehyde. RICHARD J. HENRY,* S. L. JACOBS* AND SAM BERKMAN.* *Bio-Science Res. Fndn.*

4:00 **1546.** Metabolic studies in schizophrenia. C. FROHMAN, V. WARD,* K. LATHAM,* P. BECKETT* AND J. GOTTLIEB.* *Lafayette Clinic and Wayne State Univ. Coll. of Med.*

4:15 **1547.** Biochemical determinations of canine prostatic fluid. HARRIS ROSENKRANTZ, JAMES LANGILLE* AND MARCUS M. MASON.* *Clark Univ. and Biol. Test. Lab., Worcester.*

150. Oxidative Enzymes II

WED. P.M.—AMBASSADOR, VENETIAN ROOM

Chairman: H. S. Mason

1:30 **1548.** Effect of tryptophan metabolites on melanin formation. M. SEIJI. *Harvard Med. Sch.*

1:45 **1549.** Tyrosinase and melanogenesis in goldfish. KI-HAN KIM,* T. T. TCHEN, WALTER CHAVIN AND FUNAN HU. *Wayne State Univ. and Henry Ford Hosp.*

2:00 **1550.** Purification and mechanism of mammalian tyrosinase. SEYMOUR H. POMERANTZ.* *Western Reserve Univ.*

2:15 **1551.** Effect of cyanide on oxidatic action of peroxidase. PETER NICHOLLS.* *Univ. of Pennsylvania.*

2:30 **1552.** Chromatography of mushroom phenolases. JACK L. SMITH* AND R. C. KRUEGER.* *Univ. of Cincinnati.*

2:45 **1553.** Tritium rate effect in an enzymatic hydroxylation. BRIAN J. B. WOOD* AND LLOYD L. INGRAHAM. *Univ. of California.*

3:00 **1554.** Activators and inhibitors of steroid hydroxylation by adrenocortical microsomes. D. Y. COOPER, O. FOROFF* AND O. ROSENTHAL. *Univ. of Pennsylvania.*

3:15 **1555.** Metabolism of trimethylamine-N-oxide. JOHN BAKER* AND STERLING CHAYKIN.* *Univ. of California.*

3:30 **1556.** Effect of sodium hydrosulfite on hydrogenase of *scenedesmus*. HYMAN HARTMAN* AND ALVIN I. KRASNA. *Columbia Univ.*

3:45 **1557.** Oxidation of thiosulfate by extracts of *Thiobacillus thioparus*. H. D. PECK, JR.* AND EARL FISHER, JR.* *Oak Ridge Natl. Lab. and Tulane Univ.* (Immunol.)

4:00 **1558.** Thiooxidase. G. D. AURBACH* AND WILLIAM B. JAKOBY. *Natl. Insts. of Health.*

4:15 **1559.** Growth of *E. coli* on methylphosphonic acid. L. D. ZELEZNICK,* T. C. MYERS* AND E. B. TITCHENER.* *Univ. of Illinois.*

151. Natural Products

WED. P.M.—AMBASSADOR, SURF ROOM

Chairman: K. Folkers

1:30 **1560.** Role of Δ^1-pyrroline-5-carboxylic acid-5-C^{14} in biosynthesis of nicotine. V. KRAMPL* AND C. A. HOPPERT. *Michigan State Univ.* (Nutr.)

1:45 **1561.** Biosynthesis of ricinine in Ricinus communic L. RASHID A. ANWAR,* THOMAS GRIFFITH* AND RICHARD U. BYERRUM. *Michigan State Univ.*

2:00 **1562.** Metabolism of derivatives of hexahydrobenzoic acid. M. J. SWEENEY, JR.* AND D. R. STRENGTH. *St. Louis Univ. Sch. of Med.*

2:15 **1563.** N-hydroxy-2-naphthylamine, a urinary metabolite of 2-naphthylamine in man and dog. WALTER TROLL AND NORTON NELSON. *Inst. of Industrial Med.*

2:30 **1564.** Gas chromatography of urinary aromatic acids. CHARLES C. SWEELEY* AND CLYDE M. WILLIAMS.* *Univ. of Pittsburgh and Univ. of Florida Coll. of Med.*

2:45 **1565.** Counter-double-current distribution. L. CRAIG AND O. POST.* *Rockefeller Inst.*

3:00 **1566.** Demonstration of one or more new natural hygromycins. A. D. ELBEIN,* HENRY KOFFLER AND H. R. GARNER.* *Purdue Univ.*

3:15 **1567.** Intermediates in biosynthesis of caldariomycin. JONATHAN R. BECKWITH* AND LOWELL P. HAGER. *Univ. of Illinois.*

3:30 **1568.** Biosynthesis of phenazine-1-carboxylic acid. MARK LEVITCH.* *Natl. Heart Inst.*

3:45 **1569.** Biosynthesis of actinomycin: enzymic formation of actinocin. E. KATZ* AND H. WEISSBACH. *Natl. Heart Inst.*

Biochemistry Society Social Mixers

WEDNESDAY, 9:00 P.M.

Biochemists and friends will gather by "interest groups" for informal conversation and refreshments, as follows:

1. Viruses, Genetic Mechanisms, and Biochemical Genetics—Claridge, Trimble Hall
   Hosts: D. Bonner, S. Cohen, R. Greenberg, H. Kalckar
2. Nucleic Acid, Protein Biosynthesis, etc.—Haddon Hall, Rutland Room
   Hosts: W. Cohn, L. Heppel, F. Lipmann, P. Zamecnik
3. Hydrogen Transport, Oxidative Phosphorylation and Carbohydrate Metabolism—Madison, Solarium
   Hosts: S. Colowick, F. Cori, B. Horecker, A. Nason
4. Metabolic Control Mechanisms and Hormones—Shelburne, Solarium
   Hosts: B. Magasanik, C. R. Park, E. Stadtman, E. Sutherland, Jr.
5. Protein Chemistry—Traymore, Rose Room
   Hosts: C. Anfinsen, J. Fruton, S. Moore, H. Neurath, W. Stein

Tickets will be on sale in the registration area, Lobby, Convention Hall and at the door of each Mixer.

Placement Service

Main Arena Floor, Convention Hall

Tickets

Tickets for group breakfasts, luncheons and dinners; Society dinners, Smokers and Mixers; and other Federation functions will be on sale in the registration area, Lobby, Convention Hall.
Hours: Sunday 12:00 noon to 11:00 P.M.; Monday through Thursday, 8:00 A.M. to 5:00 P.M.

Future Annual Meetings

Federation Annual Meetings for the next three years will be held as follows: 1962, April 16–21, Atlantic City; 1963, April 15–20, Atlantic City; 1964, April 12–18, Chicago.

Pharmacology Society Sessions—Wednesday, 9:00 a.m.

152. Cardiovascular Pharmacology V

WED. A.M.—DENNIS, BORTON HALL

Chairman: O. Krayer

9:00 **1570.** Effect of reserpine pretreatment on positive inotropic action of ephedrine and ouabain. VINCENT CAIROLI,* JOSEPH REILLY AND JAY ROBERTS. *Cornell Univ.*

9:15 **1571.** Species difference in depletion of myocardial catecholamines by a monoamine oxidase inhibitor. N. D. GOLDENBERG* AND F. E. SHIDEMAN. *Univ. of Wisconsin.*

9:30 **1572.** Possible role of dopamine in cardiovascular "reserpine reversal." L. G. ELTHERINGTON.* *Univ. of Washington.*

9:45 **1573.** Excretion of optical isomers of α-methyl-DOPA. ALICE F. HOGANS* AND C. C. PORTER. *Merck Inst. for Therap. Res.*

10:00 **1574.** Effect of reserpine on cardiovascular response to smoking. T. C. WESTFALL* AND D. T. WATTS. *West Virginia Univ. Med. Ctr.*

10:15 **1575.** Influence of reserpine on peripheral vascular responses to hypercapnia. C. W. NASH* AND R. J. SHIVAK.* *Univ. of Alberta.*

10:30 **1576.** Cardiac stimulation by phenoxybenzamine in the spinal dog. B. G. BENFEY AND D. R. VARMA.* *McGill Univ.*

10:45 **1577.** Action of hydroxyzine (Atarax) on pressor responses to epinephrine and norepinephrine. THEODORE R. SHERROD. *Univ. of Illinois.*

11:00 **1578.** Adrenal medullary blockade on ephedrine tachyphylaxis. R. W. GARDIER* AND A. B. RICHARDS.* *Indiana Univ.*

11:15 **1579.** Histamine release as a factor in tolerance to levarterenol. JOHN A. COPPOLA* AND JOSEPH R. DI PALMA. *Hahnemann Med. Coll.*

153. Analgesics II

WED. A.M.—DENNIS, CRYSTAL BALLROOM

Chairman: H. Isbell

9:00 **1580.** Effect of morphine on stimulated cortical slices of brain. A. E. TAKEMORI.* *State Univ. of New York.*

9:15 **1581.** Relation between brain levels and toxicity of morphine in young rats. HARVEY KUPFERBERG* AND E. LEONG WAY. *Univ. of California Med. Ctr.*

9:30 **1582.** N-Allylnoroxymorphone: a potent narcotic antagonist. HAROLD BLUMBERG, HYMAN B. DAYTON,* MORRIS GEORGE* AND DAVID N. RAPAPORT.* *Endo Labs.*

9:45 **1583.** Analgesic effect of analgesic-antagonist combinations in the rat. L. GRUMBACH AND H. I. CHERNOV.* *Sterling-Winthrop Res. Inst.* (Physiol.)

10:00 **1584.** Effect of morphine and nalorphine on serum CO_2, serum pH, and respiratory rate in the decerebrate cat. A. J. EISENMAN* AND W. R. MARTIN. *NIMH Addiction Res. Ctr.*

10:15 **1585.** Dose effect relationship of morphine antagonists on respiration in man. J. TELFORD,* C. N. PAPADOPOULOS* AND A. S. KEATS. *Baylor Univ.*

10:30 **1586.** Factors influencing tolerance in the rat. JOSEPH COCHIN AND CONAN KORNETSKY. *Natl. Insts of Health and Boston Univ.*

10:45 **1587.** Demonstration of acute tolerance and physical dependence in the dog. W. R. MARTIN AND C. G. EADES.* *NIMH Addiction Res. Ctr.*

11:00 **1588.** Distribution of free N-C^{14}-methyl morphine in the CNS of non-tolerant and tolerant dogs. S. J. MULE,* L. A. WOODS AND L. B. MELLETT. *Univ. of Michigan.*

11:15 **1589.** Self-maintained morphine "addiction"—a method for chronic programmed intravenous injections in unrestrained rats. JAMES R. WEEKS. *Upjohn Co.*

11:30 **1590.** Addiction liability of 1-(p-chlor-phenethyl)-2-methyl-6,7-dimethoxy-1,2,3,4-tetrahydroisoquinoline HCl (I). H. F. FRASER, W. R. MARTIN, A. B. WOLBACH* AND H. ISBELL. *NIMH Addiction Res. Ctr.*

154. Toxicology II

WED. A.M.—DENNIS, ST. DENIS ROOM

Chairman: E. A. Maynard

9:00 **1591.** Metabolism of FD&C red no. 1. II. Fate of 2,6-meta-xylidine in rats. H. V. LINDSTROM.* *Food and Drug Admin.*

9:15 **1592.** Toxicologic properties of cyclophosphamide (Cytoxan). A. G. WHEELER,* D. DANSBY,* H. C. HAWKINS* AND H. G. PAYNE.* *Mead Johnson & Co.*

9:30 **1593.** Aspartocin: toxicity studies in dogs. H. F. DIERMEIER AND L. A. KANEGIS.* *Lederle Labs.*

9:45 **1594.** Toxicological studies on vancomycin and on PEG 200. C. C. LEE AND R. C. ANDERSON. *Lilly Res. Labs.*

10:00 **1595.** Effects of chronic restraint stress upon systolic blood pressure, heart rate and organ weights of male albino rats. L. P. GABEL* AND M. CLAY.* *Warner-Lambert Res. Inst. and Columbia Univ.*

10:15 **1596.** Comparative chronic toxicity of the stereoisomers of thyroxine. P. J. GARVIN,* R. B. JENNINGS* AND R. M. GESLER. *Baxter Labs.*

10:30 **1597.** Toxicity and metabolism studies of β-apo-8′-carotenal in dogs. R. E. BAGDON, C. IMPELLIZZERI* AND M. OSADCA.* *Hoffmann–La Roche.*

10:45 **1598.** Subacute oral and dermal toxicity of Deet (N,N-diethyl-m-toluamide). M. L. KEPLINGER,* J. P. FRAWLEY, T. W. TUSING,* GEOFFREY WOODARD AND V. J. DARDIN.* *Hercules Powder Co., Hazleton Labs. and Woodard Res.*

11:00 **1599.** Effects of potentially carcinogenic substances on dogs. BERNARD L. OSER, STEVEN CARSON* AND STEPHEN S. STERNBERG.* *Food & Drug Res. Labs.*

11:15 **1600.** A toxicological characterization of xanthiol, a new psychotherapeutic and antinauseant agent. C. S. DELAHUNT,* R. B. STEBBINS, R. A. YEARY* AND D. E. MCKERSIE.* *Chas. Pfizer & Co.* (Pathol.)

11:30 **1601.** Effect of ethanol on urinary excretion of porphyrins and porphyrin intermediates in human subjects. HERBERT JOHNSON,* ARTHUR PAPPAS* AND JAMES M. ORTEN. *Wayne State Univ.* (Biochem.)

155. Drug Metabolism III

WED. A.M.—DENNIS, GARDEN LOUNGE

Chairman: O. H. Lowry

9:00 **1602.** Binding of imipramine and chlorpromazine in various tissues. J. V. DINGELL,* W. A. M. DUNCAN* AND J. R. GILLETTE. *Natl. Insts. of Health.*

9:15 **1603.** Sequestration of d-tubocurarine by ganglioside. R. L. IRWIN* AND E. G. TRAMS. *Natl. Insts. of Health.*

9:30 **1604.** Protein binding of penicillin by nuclear magnetic resonance. JAMES J. FISCHER.* *Harvard Med. Sch.*

9:45 **1605.** Changes in spectrum of 2-(4′-hydroxybenzeneazo)-benzoic acid (HBABA) due to addition of different serum albumins. JAMES H. BAXTER. *Natl. Heart Inst.*

10:00 **1606.** Estimation of intracellular binding of drugs in erythrocytes. JEAN M. JOHNSON* AND LEWIS S. SCHANKER. *Natl. Insts. of Health.*

10:15 **1607.** Effect of iproniazid on metabolism of *dl*-noradrenaline-2-C^{14} in the human. LAWRENCE ROSEN* AND McC. GOODALL. *Univ. of Tennessee.* (Physiol.)

10:30 **1608.** A drug-induced change in distribution and renal excretion of sulfonamides. A. H. ANTON.* *Univ. of Florida.*

10:45 **1609.** Fate of phenylbutazone and its analogues in animals. J. M. PEREL,* W. CHEN,* M. MC. SNELL* AND P. G. DAYTON. *Goldwater Mem. Hosp. and Natl. Heart Inst.*

11:00 **1610.** Tissue distribution studies of Zn^{65} and Zn^{65}-chelates in mice. F. STAND,* G. WILLIAMS,* H. HART,* B. ROSOFF* AND H. SPENCER.* *Montefiore Hosp.*

11:15 **1611.** Volume of distribution of C_{14} tagged 2-amino-2-hydroxymethyl-1,3-propanediol (THAM). M. H:SON HOLMDAHL* AND G. G. NAHAS.* *Columbia Univ.*

Pharmacology Society Sessions—Wednesday, 1:30 p.m.

156. Autonomic Pharmacology I

WED. P.M.—DENNIS, BORTON HALL

Chairman: F. W. Schueler

1:30 **1612.** Nature of reserpine action upon adrenal gland. W. R. BURACK,* P. R. DRASKOCZY* AND N. WEINER. *Harvard Med. Sch.*

1:45 **1613.** Effect of reserpine on sensitivity of rabbit ileum to sympathomimetics. J. L. SCHMIDT* AND W. W. FLEMING.* *West Virginia Univ. Med. Ctr.*

2:00 **1614.** Effects of demedullation of suprarenals and of insulin on adrenaline content of salivary glands and heart of the rat. B. C. R. STRÖMBLAD.* *Univ. of Manitoba.*

2:15 **1615.** Depression of ganglionic transmission by MO-911, a non-hydrazine monoamine oxidase inhibitor. F. M. DACOSTA* AND L. I. GOLDBERG. *Natl. Heart Inst.*

2:30 **1616.** Bulbocapnine: an adrenergic and serotonin blocking agent. E. J. WALASZEK AND J. E. CHAPMAN.* *Univ. of Kansas.*

2:45 **1617.** Nature of cocaine desensitization of ephedrine pressor effects. C. CANNON,* F. COWAN* AND T. KOPPANYI. *Georgetown Univ.*

3:00 **1618.** Drug-induced facilitation and inhibition of transmission in a sympathetic ganglion. W. K. RIKER, A. KOMALAHIRANYA* AND P. ARAMENDIA.* *Univ. of Pennsylvania.*

3:15 **1619.** Mechanisms of positive inotropic and chronotropic effects of guanethidine and bretylium. THOMAS E. GAFFNEY,* THEODORE COOPER AND EUGENE BRAUNWALD. *Natl. Heart Inst.* (Physiol.)

3:30 **1620.** Action of guanethidine and bretylium on ganglionic transmission. S. B. GERTNER AND A. ROMANO.* *Seton Hall Coll. of Med.*

3:45 **1621.** Effect of bretylium tosylate on myocardial release and extraction of catecholamine. J. H. SIEGEL* AND J. P. GILMORE. *Natl. Heart Inst.* (Physiol.)

4:00 **1622.** Pharmacologic study of two analogs of bretylium. KENNETH I. COLVILLE,* A. LLOYD WNUCK,* MARTIN M. JACOBSON,* ROCCO V. FANELLI* AND C. H. ELLIS. *Wellcome Res. Labs.* (Physiol.)

157. Renal Pharmacology I

WED. P.M.—DENNIS, CRYSTAL BALLROOM

Chairman: T. H. Maren

1:30 **1623.** Combined administration of phthalimidine and thiazide diuretics. ROBERT H. SELLER* AND MORTON FUCHS.* *Hahnemann Med. Coll.*

1:45 **1624.** Effect of dosage regimen on diuretic efficacy of chlorothiazide in human subjects. JOHN MURPHY,* WILLIAM CASEY* AND LOUIS LASAGNA. *Johns Hopkins Sch. of Med.*

2:00 **1625.** Direct comparison of C^{14} chlorothiazide and T^3 hydrochlorothiazide in man. BENJAMIN CALESNICK, HERBERT SHEPPARD AND NATALIE BOWEN.* *Hahnemann Med. Coll.*

2:15 **1626.** Influence of desoxycorticosterone trimethylacetate and chlorothiazide on metabolism of cesium-137 in the rat. B. V. RAMA SASTRY,* M. T. BUSH AND G. R. MENEELY.* *Vanderbilt Univ.*

2:30 **1627.** Inhibition of kaluretic action of hydrochlorothiazide. E. J. CAFRUNY, CHARLES ROSS* AND JOHN DAVITT.* *Univ. of Michigan.*

2:45 **1628.** A potent, non-steroidal orally active antagonist of aldosterone. VIRGIL D. WIEBELHAUS,* JOSEPH WEINSTOCK,* FRANCIS T. BRENNAN,* GENEVIEVE SOSNOWSKI* AND THEODORE J. LARSEN.* *Smith Kline & French Labs.* (Biochem.)

3:00 **1629.** Non-steroidal aldosterone antagonist (SK&F 8542) in man. A. P. CROSLEY, JR., L. RONQUILLO* AND F. ALEXANDER.* *Mercy-Douglass Hosp.*

3:15 **1630.** Pteridine compound as an inhibitor of aldosterone action in man. JOHN H. LARAGH,* EDITH B. REILLY,* T. BODLEY STITES* AND MARIELENA ANGERS.* *Presbyterian Hosp., Goldwater Mem. Hosp. and Columbia Univ.*

3:30 **1631.** Comparative diuretic activity of some analogues of cyclopenthiazide (Navidrix). R. RUTLEDGE,* W. E. BARRETT AND A. J. PLUMMER. *Ciba Pharmaceut. Prod.*

3:45 **1632.** Some new, highly potent, diuretic agents related to benzthiazide. J. M. MCMANUS,* A. SCRIABINE* AND W. M. MCLAMORE.* *Chas. Pfizer.*

4:00 **1633.** Diuretic activity of 2-methyl-3,4-dihydro-3(2′2′2′-trifluoroethyl-thiomethyl)-6-chloro-7-sulfamyl-1,2,4-benzothiadiazine. A. SCRIABINE,* J. MCMANUS,* B. KONDRATAS,* M. YU,* S. Y. P'AN AND W. MCLAMORE.* *Chas. Pfizer.*

4:15 **1634.** Diurnal variations in urinary electrolytes during thiazide therapy. DUNCAN E. HUTCHEON AND D. K. ROWLAND.* *Seton Hall Coll. of Med.*

158. Drug Metabolism IV: Drugs and Membranes

WED. P.M.—DENNIS, GARDEN LOUNGE

Chairman: B. B. Brodie

1:30 **1635.** Bacterial mutant defective in the transport of proline. D. KESSEL* AND M. LUBIN. *Harvard Med. Sch.*

1:45 **1636.** Action of steroids on intestinal smooth muscle. ALLAN D. BASS AND W. B. SMITH.* *Vanderbilt Univ.*

2:00 **1637.** K transport and mechanical responses of isolated longitudinal smooth muscle from guinea pig ileum. GEORGE B. WEISS,* ROBERT E. COALSON* AND LEON HURWITZ. *Vanderbilt Univ.*

2:15 **1638.** Release of P^{32} and membrane depolarization in high potassium solutions. S. MIYAMOTO,* K. KOKETSU* AND L. G. ABOOD.* *Univ. of Illinois.*

2:30 **1639.** Effect of cardiac glycosides upon potassium exchange of the dog submaxillary gland. IVENS A. SIEGEL.* *Univ. of Cincinnati.*

2:45 **1640.** Differential changes in permeability of isolated mesentery to three solutes. W. O. BERNDT* AND R. E. GOSSELIN. *Dartmouth Med. Sch.*

3:00 **1641.** Uptake of 5-hydroxytryptophan by brain and its inhibition by certain aromatic amino acids. S. M. SCHANBERG,* C. A. MCILROY* AND N. J. GIARMAN. *Yale Med. Sch.*

3:15 **1642.** Transfer of sugars from cerebrospinal fluid (CSF) into blood. LEON D. PROCKOP,* LEWIS S. SCHANKER AND BERNARD B. BRODIE. *Natl. Insts. of Health.*

3:30 **1643.** Effect of hypophysectomy on active intestinal transport of uracil in vitro. JOHN J. JEFFREY* AND LEWIS S. SCHANKER. *Natl. Insts. of Health.*

3:45 **1644.** Starvation-induced increase in active intestinal transport of uracil in vitro. LEWIS S. SCHANKER AND JOHN J. JEFFREY.* *Natl. Insts. of Health.*

4:00 **1645.** Exchange of large molecular weight compounds between CSF and plasma. ARTHUR ROTHMAN,* EMIL J. FREIREICH,* JAMES GASKINS* AND DAVID P. RALL. *Natl. Cancer Inst.*

Pharmacology Society Dinner

WEDNESDAY, 6:30 P.M.—DENNIS, BORTON HALL

(Ticket sales close Tuesday, 5:00 P.M.)

Federation Office: Room 8, Convention Hall

Motion Pictures

Motion pictures will be run continuously for three days, Tuesday through Thursday, 9:00 A.M.–5:00 P.M., Room D, Main Arena Floor, Convention Hall.

Press Room: Room 9, Convention Hall

Pathology Society Sessions—Wednesday, 9:00 a.m.

159. Stress

WED. A.M.—RITZ-CARLTON, RITZ HALL

Chairmen: F. R. Skelton; J. P. Strong

9:00 **1646.** Influence of sex and age on adrenal cortical response to stress. F. R. SKELTON AND P. M. HYDE. *Louisiana State Univ. and Urban Maes Res. Fndn.*

9:15 **1647.** Adrenals and reproductive organs of female mice kept singly, grouped, or grouped with a vasectomized male. JER K. MODY* AND JOHN J. CHRISTIAN. *Univ. of Pennsylvania.*

9:30 **1648.** Effect of grouping on adrenals and gonads of chickens. GEORGE L. FLICKINGER* AND HERBERT L. RATCLIFFE. *Univ. of Pennsylvania.*

9:45 **1649.** Coronary arteriosclerosis in isolated, paired, and grouped chickens. G. E. MCKISSICK,* G. L. FLICKINGER, JR.* AND H. L. RATCLIFFE. *Univ. of Pennsylvania.*

10:00 **1650.** Effect of dosage on hypertensive effect of corticosterone in stressed and non-stressed rats. C. E. HALL AND O. HALL. *Univ. of Texas.* (Physiol.)

10:15 **1651.** Vascular lesions from corticosterone overdosage. O. HALL AND C. E. HALL. *Univ. of Texas.*

10:30 **1652.** Relationship of periarteritis to valvular lesions in the rat. ALFRED ANGRIST AND MASAMICHI OKA.* *Albert Einstein Coll. of Med.*

10:45 **1653.** Stress, epinephrine and peptic ulcer. A. S. LEONARD,* D. M. NICOLOFF,* E. T. PETER,* N. H. STONE* AND O. H. WANGENSTEEN. *Univ. of Minnesota.* (Physiol.)

11:00 **1654.** Identification of steroid induced ulcers in rats, using the Prussian blue reaction. ANDRÉ ROBERT* AND JAMES E. NEZAMIS.* *Upjohn Co.*

11:15 **1655.** Effects of cortisone on rotational shock in rabbits. F. B. COLLINS,* J. R. GALYEAN* AND J. G. BRUNSON. *Univ. of Mississippi.*

11:30 **1656.** Ink distribution patterns in drum-shocked rabbits: influence of a phenothiazine derivative. J. R. GALYEAN, III,* F. B. COLLINS* AND J. G. BRUNSON. *Univ. of Mississippi.*

11:45 **1657.** Histochemical demonstration of tissue adaptation to chronic hypoxia. ENRIQUE VALDIVIA.* *Univ. of Wisconsin.*

160. Thrombosis and Embolism

WED. A.M.—RITZ-CARLTON, BALLROOM

Chairmen: H. P. Smith; R. W. Coon

9:00 **1658.** Stability of fibrinogen and fibrin. WILLIAM S. MEDART.* *Washington Univ.*

9:15 **1659.** Genesis of thrombi: study of their fine structure. O. A. ISERI* AND E. P. BENDITT. *Univ. of Washington.*

9:30 **1660.** Thrombocyte alterations during coagulation: microscopic observations of thin sections. N. F. RODMAN, JR.,* R. G. MASON,* N. B. MCDEVITT* AND K. M. BRINKHOUS. *Univ. of North Carolina.*

9:45 **1661.** Disturbances of platelet volume in disease, correlation with ultrastructural abnormalities. J. W. REBUCK, J. M. RIDDLE* AND M. G. BROWN.* *Henry Ford Hosp. and Amer. Optical Co.*

10:00 **1662.** Acceleration of thrombus formation by fatty acids. WILLIAM E. CONNOR.* *State Univ. of Iowa.*

10:15 **1663.** Thrombosis, infarction and hemolytic anemia induced by diet in the rat. ROBERT E. PRIEST, SIGURD J. NORMANN* AND EARL P. BENDITT. *Univ. of Washington.*

10:30 **1664.** Chemico-pathologic studies of dietary lipids, thrombosis, and clot-lysis: demonstration in vitro of anti-lytic effect of equine platelets on clots made with rat plasma. F. GOODALE, K. ALOUSI,* R. F. SCOTT AND W. A. THOMAS. *Albany Med. Coll.*

10:45 **1665.** Chemico-pathologic studies of dietary lipids, thrombosis and clot-lysis: effect of thrombogenic diets and their modifications on adipose tissue fatty acid patterns of rats. R. F. SCOTT, E. MORRISON* AND E. OPALKA.* *Albany Med. Coll.*

11:00 **1666.** A physiologic and anatomic study of experimental fat embolism in dogs. NIRMAL SAINI* AND WILLIAM E. JAQUES. *Univ. of Oklahoma.*

11:15 **1667.** Thromboplastinase as an antithrombotic agent. ABRAMO OTTOLENGHI,* J. RUTMAN,* S. GOLLUB* AND A. W. ULIN.* *Albert Einstein Med. Ctr.*

161. Pancreas

WED. A.M.—RITZ-CARLTON, CARLTON ROOM

Chairmen: J. M. B. Bloodworth, Jr.; D. G. Scarpelli

9:00 **1668.** Effect of propylthiouracil on exocrine glands. LEO M. SREEBNY AND BERTRAM S. KRAUS.* *Univ. of Washington.*

9:15 **1669.** Effect of glucagon on acinar pancreas. L. JARETT* AND P. E. LACY. *Washington Univ.*

9:30 **1670.** Species difference in pancreatic and serum content of amylase, lipase, and lecithinase. A. L. ZIEVE,* W. C. VOGEL* AND W. D. KELLY.* *VA Hosp. and Univ. of Minnesota.*

9:45 **1671.** Serum proteolytic activity in acute hemorrhagic pancreatitis. M. S. RITTENBURY,* W. L. FARRISON* AND A. MOUNTER.* *Med. Coll. of Virginia.*

10:00 **1672.** Quantitative determination of insulin in dissected beta cells. J. R. WILLIAMSON* AND P. E. LACY. *Washington Univ.*

10:15 **1673.** Enzymatic activity of islet and acinar tissue from the pancreas of normal and hyperglycemic rabbits. C. H. SMITH* AND P. E. LACY. *Washington Univ.*

10:30 **1674.** Histochemistry of rabbit pancreatic B cell enzymes and effect of cortisone and alloxan. S. S. LAZARUS AND H. BARDEN.* *Isaac Albert Res. Inst.*

10:45 **1675.** Effect of alloxan on pancreas and blood sugar of rabbits pretreated with cortisone and hypoglycemic sulfonylureas. BRUNO W. VOLK AND SYDNEY S. LAZARUS. *Isaac Albert Res. Inst.*

11:00 **1676.** Plasma glycoproteins in human and experimental diabetes mellitus. J. M. B. BLOODWORTH, JR. *Ohio State Univ.*

11:15 **1677.** A heat labile material which influences the reaction between insulin and antibody in an insulin-resistant patient. E. R. ARQUILLA, R. E. TRANQUADA,* P. M. BEIGELMAN* AND H. E. MARTIN.* *Univ. of Southern California.*

12:30 P.M. Films of Interest to Pathologists—see page 470.

Pathology Society Sessions—Wednesday, 1:30 p.m.

162. Kidney I

WED. P.M.—RITZ-CARLTON, BALLROOM

Chairmen: J. M. Craig; G. Vawter

1:30 **1678.** Glomerular filtration. Electron microscopy of the kidney following dextran infusion in the rat. J. A. JAMES* AND C. T. ASHWORTH.* *Univ. of Texas Southwestern Med. Sch.*

1:45 **1679.** Coenzyme Q_{10} and succinate-tetrazolium reductase activity of neonatal rat kidney. PETER STRAND* AND LEE W. WATTENBERG. *Univ. of Minnesota.*

2:00 **1680.** Enzymatic histochemical alterations in renal tubules after trauma. A. STEIN, P. PAKDAMAN,* N. LEMPERT,* A. BOBA* AND S. R. POWERS, JR.* *Albany Med. Coll.*

2:15 **1681.** Effect of maleic acid on renal tubular enzyme activity and renal morphology. HOWARD G. WORTHEN.* *Univ. of Minnesota.*

2:30 **1682.** Hypophosphatemia and aminoaciduria in rats fed trans-aconitic acid. FRANCIS X. FELLERS* AND GORDON F. VAWTER. *Children's Hosp. Med. Ctr. and Harvard Med. Sch.*

2:45 **1683.** Renal function and structure in magnesium depleted rats. W. O. SMITH,* A. LINDNER, D. BAXTER* AND T. KUTKAM.* *VA Hosp. and Univ. of Oklahoma.*

3:00 **1684.** Compensatory renal growth following unilateral nephrectomy in the rat. D. S. MIYADA* AND N. B. KURNICK.* *UCLA and VA Hosp.*

3:15 **1685.** Effect of mercury poisoning on serum protein metabolism and on renal extravascular serum protein space. L. I. GOTTLIEB* AND R. D. COYE. *Univ. of Wisconsin.*

3:30 **1686.** Renal protein transport in normal and nephrotic rats. KAREN OLNESS,* B. W. PAPERMASTER* AND R. L. VERNIER. *Univ. of Minnesota.*

3:45 **1687.** Chronic acidosis in subtotally nephrectomized rats. VARDAMAN M. BUCKALEW, JR.* AND ASHTON B. MORRISON. *Univ. of Pennsylvania.*

4:00 **1688.** Renal lesions and electrolyte compositions in experimental salicylate intoxications; increased mortality with added Diamox. J. M. CRAIG, V. P. FERNANDO,* F. X. FELLERS* AND S. YAFFE.* *Boston Lying-in Hosp., Children's Hosp. Med. Ctr., and Harvard Med. Sch.*

163. Neoplasia II

WED. P.M.—RITZ-CARLTON, CARLTON ROOM

Chairmen: E. M. Nadel; P. M. Gullino

1:30 **1689.** Estrogen sensitivity of normal, and of dependent and autonomous mammotropic pituitary tumor cells. KELLY H. CLIFTON AND JACOB FURTH. *Univ. of Wisconsin and Roswell Park Mem. Inst.*

1:45 **1690.** Role of mammotropes in induction of breast carcinoma in male rats. U. KIM* AND J. FURTH. *Roswell Park Mem. Inst.*

2:00 **1691.** Effects of estrogen on growth and biological behavior of a transplantable gonadotropin-secreting pituitary tumor in hamsters. A. B. RUSSFIELD, G. FRIEDLER* AND C. PALACAS.* *Bio-Research Inst.*

2:15 **1692.** Growth of human and murine cancers in mice bearing ACTH-secreting pituitary tumors. A. H. HANDLER AND G. LAFAUCI.* *Children's Cancer Res. Fndn. and Harvard Med. Sch.*

2:30 **1693.** Host control of tumor growth: single and multiple isogenic transplants. RONALD D. GUTTMANN* AND J. BRADLEY AUST.* *Univ. of Minnesota.* (Pharmacol.)

2:45 **1694.** In vivo and in vitro demonstration of tumor immunity to the transplanted melanoma of hamsters. S. A. ROSENBERG* AND J. C. ROSENBERG.* *Johns Hopkins Univ. and Univ. of Minnesota.*

3:00 **1695.** Transplantable lymphosarcoma in mice. PRABHAKAR M. CHAPHEKAR,* CHARLOTTE SCHMIDT* AND ALVAR A. WERDER. *Univ. of Kansas.*

3:15 **1696.** A spontaneous rhabdomyosarcoma in the W/Fu rat and its behavior on successive transplantations. CHARLOTTE L. MADDOCK, ELEANOR RILEY* AND LIVIA KURY.* *Children's Cancer Res. Fndn. and Harvard Med. Sch.*

3:30 **1697.** Technique for growing in vivo "host-isolated" tumors. PIETRO M. GULLINO. *Natl. Cancer Inst.*

3:45 **1698.** Scalp tumors as tools of quantitative oncology. HORACE GOLDIE, PARNELL AVERY,* SAMUEL HOUSTON,* REDIE LEMONS* AND FRANKYN SEABROOKS.* *Meharry Med. Coll.*

Pathology Society Dinner

WEDNESDAY, 6:00 P.M.—RITZ-CARLTON, BALLROOM

(Ticket sales close Wednesday, 12:00 noon)

8:15 P.M.—Symposium, following Dinner

SYMPOSIUM: Potential and Future of Experimental Pathology

Chairman: Jacob Furth

8:15 Introduction: Whither experimental pathology. JACOB FURTH. *Roswell Park Mem. Inst.*

Discussion, Parke-Davis Award Recipients:

8:25 FRANK DIXON. *Univ. of Pittsburgh.*
8:40 EMMANUEL FARBER. *Tulane Univ.*
8:55 STANFIELD ROGERS. *Univ. of Tennessee*
9:10 F. R. SKELTON. *Louisiana State Univ.*
9:25 Open discussion.

Nutrition Society Sessions—Wednesday, 9:00 a.m.

164. Protein I: Amino Acid—Evaluation

WED. A.M.—AMBASSADOR, "22" CLUB

Chairmen: W. Griffith; Gladys Emerson

9:00 **1699.** Errors in amino acid availability determinations. H. J. H. DE MUELENAERE,* M. L. CHEN* AND A. E. HARPER. *Univ. of Wisconsin.*

9:15 **1700.** Growth of rats correlated with ribonuclease activity and ribonucleic acid. J. B. ALLISON, R. W. WANNEMACHER, JR.,* L. P. PARMER* AND R. GOMEZ.* *Rutgers Univ.*

9:30 **1701.** Influence of dietary protein level on amino acid requirement of the rat. G. A. LEVEILLE* AND H. E. SAUBERLICH. *U.S. Army Med. Res. and Nutrition Lab.*

9:45 **1702.** Effect of diet on blood amino acid concentrations. C. PERAINO* AND A. E. HARPER. *Univ. of Wisconsin.*

10:00 **1703.** Amino acid requirements as a pattern for protein evaluation. P. B. RAMA RAO* AND B. CONNOR JOHNSON. *Univ. of Illinois.*

10:15 **1704.** Use of fasting amino acid plasma levels in formulation of nutritionally adequate diets. C. I. JAROWSKI,* A. PUCCINI,* M. C. OTEY* AND M. WINITZ. *Chas. Pfizer and Natl. Insts. of Health.* (Biochem.)

10:30 **1705.** Effect of negative nitrogen balance on plasma amino acids. MARIAN E. SWENDSEID, BARBARA W. FRIEDRICH* AND STEWARD G. TUTTLE.* *VA Ctr. and UCLA.*

10:45 **1706.** Comparison of procedures for assessing nitrogen retention in the immature W. L. cockerel. W. R. SANSLONE* AND R. L. SQUIBB. *Rutgers Univ.*

11:00 **1707.** Comparison of essential amino acid patterns. MARILYN KIRK,* NORMA MATHENY* AND MAY REYNOLDS. *Univ. of Wisconsin.*

11:15 **1708.** Ability of the chick to utilize D amino acid nitrogen in synthesis of nonessential amino acids. W. R. FEATHERSTON* AND H. R. BIRD. *Univ. of Wisconsin.*

11:30 **1709.** Effect of amino acid imbalance on nitrogen retention. RICARDO BRESSANI. *Inst. of Nutrition of Central America and Panama.*

11:45 **1710.** Effect of source on nitrogen utilization in man. LUCY SHORTRIDGE,* KO CHENG CHAO,* CONSTANCE KIES* AND MAY S. REYNOLDS. *Univ. of Wisconsin.*

165. Nutrition: Gastroenterology and Pathology

WED. A.M.—AMBASSADOR, ROTUNDA

Chairmen: R. W. Engel; A. L. Forbes

9:00 **1711.** Development of gastric epithelial hyperplasia in rats fed polyoxyethylene monostearate. CARL D. DOUGLASS AND LEO FRIEDMAN. *Food and Drug Admin.*

9:15 **1712.** Enzyme activity (LAP, AP) of intestinal mucosa of mice. G. Y. GOTTSCHALL,* RENE J. DUBOS* AND TOKUHIKO HIGASHI.* *Rockefeller Inst.*

9:30 **1713.** Effect of antibiotics and sulfonamides on development of hepatic cirrhosis in choline-deficient rats. W. D. SALMON AND PAUL M. NEWBERNE.* *Auburn Univ.*

9:45 **1714.** Effect of carbon tetrachloride on enzymes and biochemical constituents of rat liver. I. E. KARL,* R. SCHWARTZ,* S. M. MCNICOL,* H. ZARKOWSKY* AND R. E. SHANK. *Washington Univ.*

10:00 **1715.** Pathological effects of excess methionine in the diet of young rats. J. A. STEKOL AND JOHN SZARAN.* *Inst. for Cancer Research.*

10:15 **1716.** Hemorrhagenicity of oxidized lipids. JOHN T. MATSCHINER* AND E. A. DOISY, JR. *St. Louis Univ.* (Biochem.)

10:30 **1717.** Muscular dystrophy in turkeys. T. M. FERGUSON AND J. R. COUCH. *Texas A & M Coll.*

10:45 **1718.** Biochemical studies of chick edema disease. DONALD F. FLICK,* CARL D. DOUGLASS, AND LINDA GALLO.* *Food and Drug Admin.*

11:00 **1719.** Effects of carbohydrate, vitamins and iron on toxicity of a fat emulsion. L. J. HIRSCH,* G. ELENBOGEN,* P. J. GARVIN* AND P. A. SEAGRAVES.* *Baxter Labs.*

11:15 **1720.** Effects of busulfan ('Myleran') on cataract formation and reproduction in rats. AMOS E. LIGHT. *Wellcome Res. Labs.*

Nutrition Society Sessions—Wednesday, 1:30 p.m.

166. SYMPOSIUM: Biological Role and Mechanism of Action of Vitamin K

WED. P.M.—AMBASSADOR, RENAISSANCE ROOM

Chairmen: E. A. Doisy; R. D. Dallam

1:30 **1721.** Chairman's introductory remarks. E. A. DOISY. *St. Louis Univ.*

1:40 **1722.** Nutritional hypoprothrombinemia and metabolism of vitamin K. E. A. DOISY, JR. *St. Louis Univ.*

2:10 **1723.** Vitamin K and other quinones as coenzymes in oxidative phosphorylation in bacterial systems. A. F. BRODIE. *Harvard Med. Sch.*

2:40 **1724.** Role of vitamin K in electron transport. W. D. WOSILAIT. *State Univ. of New York.*

3:10 **1725.** Role of vitamin K and other quinones in photosynthetic phosphorylation. D. I. ARNON. *Univ. of California.*

American Institute of Nutrition Banquet

Presentation of Awards and Fellows

WEDNESDAY, 6:30 P.M.—AMBASSADOR, RENAISSANCE ROOM

Open to members and non-members. Ticket sales close Tuesday, 5:00 P.M.

Exhibits—Inspection Periods

Monday: 8:00 A.M. to 5:00 P.M.
Tuesday through Friday: 8:45 A.M. to 5:00 P.M.

Visible Index and Message Center

Consult the visible index of registrants to locate your friends—registration area, Lobby, Convention Hall.

Future Annual Meetings

Federation Annual Meetings for the next three years will be held as follows: 1962, April 16–21, Atlantic City; 1963, April 15–20, Atlantic City; 1964, April 12–18, Chicago.

Immunology Society Sessions—Wednesday, 9:00 a.m.

167. Interference. Latency

WED. A.M.—SHELBURNE, GRANDE BALLROOM

Chairman: H. M. Rose

9:00 **1726.** Inhibition by cortisone of the synthesis and action of interferon. K. MARILYN SMART* AND EDWIN D. KILBOURNE. *Cornell Univ.*

9:15 **1727.** Interferon effect on virus production in virus-susceptible and insusceptible cells. S. E. GROSSBERG* AND J. J. HOLLAND. *Univ. of Minnesota.*

9:30 **1728.** Role of interferon in persistent viral infection of tissue cultures. FRIEDRICH DEINHARDT, JOSE RODRIGUEZ* AND WERNER HENLE. *Univ. of Pennsylvania.*

9:45 **1729.** Synthesis of virus subunits in mixedly infected cells. JOHN L. RIGGS,* ERICK LYCKE* AND W. WILBUR ACKERMANN. *Univ. of Michigan.*

10:00 **1730.** Viral development in mixedly infected cells. W. WILBUR ACKERMANN AND ERICK LYCKE.* *Univ. of Michigan.*

10:15 **1731.** Protection against Mengo virus by agents affecting the RES. L. J. OLD,* D. A. CLARKE,* E. STOCKERT,* C. PORTER* AND S. W. ORENSKI.* *Sloan-Kettering and Boyce Thompson Insts.*

10:30 **1732.** Homologous interference in plaque formation with a myxovirus. G. D. HSIUNG. *Yale Univ.*

10:45 **1733.** Studies using Sindbis virus to interfere with vesicular stomatitis virus (VSV) in chick embryo (CE) cell cultures. MONTO HO.* *Univ. of Pittsburgh.*

11:00 **1734.** Immune mechanisms in the pathogenesis of lymphocytic choriomeningitis in mice. J. HOTCHIN,* J. SEAMER,* J. BARLOW,* L. BENSON* AND A. GLEDHILL.* *New York State Health Dept.*

11:15 **1735.** Cell-virus interaction in dengue-carrier KB cultures. M. M. SIGEL, A. R. BEASLEY,* F. M. WELLINGS,* W. LICHTER* AND J. A. WILLIAMS.* *Univ. of Miami.*

11:30 **1736.** Isolation of a virus from a clone of a human cell line in continuous cultivation. MATHILDE KRIM,* SAM C. WONG* AND EDWIN D. KILBOURNE. *Cornell Univ.*

11:45 **1737.** Persistent infection of mouse cells with polyoma virus. HAROLD E. PEARSON. *Univ. of Southern California.*

12:00 **1738.** Resistance of polyoma virus-immune animals to transplanted polyoma tumors. K. HABEL. *Natl. Insts. of Health.*

168. Antibody Formation I

WED. A.M.—SHELBURNE, KERRY HALL

Chairman: A. B. Stavitsky

9:00 **1739.** Time for doubling of serum titer during the anamnestic response to sulfanilazo-bovine globulin. JOSEPH S. INGRAHAM. *Indiana Univ.*

9:15 **1740.** Role of thymus in development of the immune response. OLGA ARCHER* AND J. C. PIERCE * *Univ. of Minnesota.*

9:30 **1741.** Effect of splenectomy on the primary and secondary response to BSA. HAROLD R. WOLFE AND GRACE D. LINK.* *Univ. of Wisconsin.*

9:45 **1742.** Immune response in adrenalectomized rabbits. IGNATIUS L. TRAPANI. *Natl. Jewish Hosp., Denver.* (Physiol.)

10:00 **1743.** Tritiated thymidine incorporation by antibody-producing cells during the secondary response in the rabbit. R. N. BANEY,* J. J. VAZQUEZ AND F. J. DIXON. *Univ. of Pittsburgh.*

10:15 **1744.** Effect of bacterial lipopolysaccharides on hemolysin formation in mice. ROBERT E. FRANZL* AND PHILIP D. MCMASTER. *Rockefeller Inst.*

10:30 **1745.** Effect of 5-bromodeoxyuridine on an entirely in vitro secondary antibody response. THOMAS F. O'BRIEN.* *Harvard Univ.*

10:45 **1746.** Effect of various pharmacological agents on the secondary antibody response to diphtheria toxoid in mice. WILLIAM T. BUTLER.* *Harvard Univ.*

11:00 **1747.** Hyperimmunization. JAMES J. A. CAVANAUGH* AND SIDNEY LESKOWITZ. *Massachusetts Gen. Hosp.*

11:15 **1749.** Metabolism of serum proteins in hens and ovarian transport of serum proteins and specific antibody to yolks. ROY PATTERSON.* *Univ. of Pittsburgh.*

11:30 **1750.** Effect of prolonged immunization on in vitro and in vivo properties of rabbit anti-mouse erythrocyte serum II. ISRAEL DAVIDSOHN, CHANG LING LEE* AND NENA MIH.* *Chicago Med. Sch. and Mt. Sinai Hosp.*

169. Infection and Resistance

WED. A.M.—SHELBURNE, CORAL REEF ROOM

Chairman: D. W. Talmage

9:00 **1751.** A histochemical study of phagocytic and enzymatic functions of rabbit mononuclear and polymorphonuclear exudate cells and alveolar macrophages. ARTHUR M. DANNENBERG, JR. AND PAUL C. WALTER.* *Univ. of Pennsylvania.*

9:15 **1752.** Synergistic effect of trichinosis on EMC-virus infections in rats. L. KILHAM AND L. J. OLIVIER.* *Natl. Insts. of Health.*

9:30 **1753.** Changes in plasma protein components during bacterial infections in mice. CURTIS A. WILLIAMS, JR. AND COURTNEY T. WEMYSS, JR.* *Rockefeller Inst. and Hofstra Coll.*

9:45 **1754.** Yeast hemolysin in the brewing process. I. A. PARFENTJEV. *Inst. of Applied Biol., New York.*

10:00 **1755.** Interaction between phagocytes and Listeria monocytogenes in vitro. JOHN W. OSEBOLD AND A. NJOKU-OBI.* *Univ. of California.*

10:15 **1756.** Persistence of Vi antigen in mouse tissue. SIDNEY GAINES, JULIUS A. CURRIE* AND JOSEPH G. TULLY.* *Walter Reed Army Inst. of Res.*

10:30 **1757.** Analysis of human streptococcal infections by immunoelectrophoresis. S. P. HALBERT AND S. KEATINGE.* *Columbia Univ.*

10:45 **1758.** Immunohistochemical localization of Cx-reactive protein in inflammatory lesions of the rabbit. I. KUSHNER* AND M. H. KAPLAN. *Western Reserve Univ.*

11:00 **1759.** Measurement of the mouse protective effect of antibody for Pseudomonas aeruginosa in burned and unburned patients' sera. C. D. GRABER, D. CUMMINGS,* E. H. VOGEL, JR.* AND W. T. TUMBUSCH.* *Ft. Sam Houston, Texas.*

11:15 **1760.** Protective effect of intravenous mumps vaccine in early neonatal mice. WALDON B. WACKER,* MURRAY M. LIPTON AND ALEX J. STEIGMAN. *Univ. of Louisville.*

11:30 **1761.** Antibody responses in unsuccessfully vaccinated individuals. WILLIAM B. PINCUS* AND JOHN A. FLICK. *Univ. of Pennsylvania.*

Immunology Society Sessions—Wednesday, 1:30 p.m.

170. Antigens and Antibodies II: Determinants

WED. P.M.—SHELBURNE, GRANDE BALLROOM

Chairman: D. H. Campbell

1:30 **1762.** A chemical difference in the active sites of two antibodies. M. E. KOSHLAND, F. M. ENGLBERGER* AND S. M. GADDONE.* *Brookhaven Natl. Lab.*

1:45 **1763.** Characterization of sub-units of the γ globulins. G. M. EDELMAN* AND M. D. POULIK.* *Rockefeller Inst.*

2:00 **1764.** Resynthesis and properties of the active component of a peptic digest of rabbit antibody. A. NISONOFF. *Univ. of Illinois.*

2:15 **1765.** Papain digested rabbit antihuman gamma globulin antibody fractions. ZOLTAN OVARY. *New York Univ.*

2:30 **1766.** Involvement of tyrosine in the combining regions of several antibodies ALLAN GROSSBERG* AND DAVID PRESSMAN. *Roswell Park Mem. Inst.*

2:45 **1767.** Antigenicity of synthetic copolymers of glutamic acid and lysine. PAUL H. MAURER. *Seton Hall Coll. of Med.*

3:00 **1768.** Purification of antibody to a galactosyl-protein conjugate. E. W. BASSETT,* S. M. BEISER AND S. W. TANENBAUM.* *Columbia Univ.*

3:15 **1769.** Inhibition with simple sugars of hemagglutination of red cells modified with Salmonella antigenic preparations. MARIAN TRUSZCZYNSKI* AND EDGAR E. BAKER. *Boston Univ.*

3:30 **1770.** N-(D-benzylpenicilloyl) group as an antigenic determinant in rabbits immunized with benzylpenicillin. BERNARD B. LEVINE.* *New York Univ.*

3:45 **1771.** Inhibition of reaction between performic-acid oxidized RNase and its antibody by peptide fragments. RAY K. BROWN* AND ROBERT DELANEY.* *New York State Health Dept.*

4:00 **1772.** Chemical basis for the serological specificity of group C hemolytic streptococci. RICHARD M. KRAUSE AND MACLYN MCCARTY. *Rockefeller Inst.*

4:15 **1773.** Immunochemical studies with iodoacetamide-treated bovine serum albumin. J. SRI RAM.* *Univ. of Pittsburgh.*

171. Hypersensitivity I

WED. P.M.—SHELBURNE, KERRY HALL

Chairman: M. H. Kaplan

1:30 **1774.** Experimental immunoallergic monoarthritis in rabbits. C. V. TEODORU. *Albert Research Inst.* (Physiol.)

1:45 **1775.** Immunologic specificity in the induction of adjuvant arthritis in the rat. BYRON H. WAKSMAN AND MARTIN H. FLAX.* *Massachusetts Gen. Hosp.*

2:00 **1776.** Pathogenesis of immunologically induced chronic glomerulonephritis. F. J. DIXON. *Univ. of Pittsburgh.*

2:15 **1777.** Fluorescence microscopy study of diabetic glomerulosclerosis. ALINE BERNS* AND H. T. BLUMENTHAL.* *Jewish Hosp., St. Louis.*

2:30 **1778.** Encephalomyelitic activity of myelin isolated by ultracentrifugation. ROBERT H. LAATSCH,* SPENCER GORDON,* MARIAN W. KIES AND ELLSWORTH C. ALVORD, JR. *Natl. Insts. of Health and Univ. of Washington.* (Biochem.)

2:45 **1779.** Encephalitogenic activity of bovine nervous tissue cell fractions. ROBERT E. OLSON.* *Univ. of Minnesota.*

3:00 **1780.** Critical relationships between constituents of the antigen-adjuvant emulsion in experimental allergic encephalomyelitis in a completely susceptible mouse genotype. JOHANNA M. LEE* AND HOWARD A. SCHNEIDER. *Rockefeller Inst.* (Nutr).

3:15 **1781.** Effect of delayed treatment of experimental allergic encephalomyelitis with 6-mercaptopurine. LEON W. HOYER.* *Univ. of Minnesota.*

3:30 **1728.** Influence of splenectomy on passive transfer of allergic encephalitis in a rat. HILARY KOPROWSKI, GEORGE A. JERVIS* AND DIANE SCHOENIGER.* *Wistar Inst. and Letchworth Village.*

3:45 **1783.** Two-dimensional serum electrophoretic patterns in guinea pigs with experimental allergic encephalomyelitis. M. VULPE,* N. ROTTER,* M. GOODMAN AND EMILY POULIK.* *Wayne State Univ.*

4:00 **1784.** Acidic mucopolysaccharides and resistance to lethal effects of Russell viper venom. R. D. HIGGINBOTHAM.* *Univ. of Texas.*

Immunology Society Smoker

WEDNESDAY, 9:00 P.M.—SHELBURNE, GRANDE BALLROOM

Thursday, April 13

Intersociety Sessions—Thursday, 9:00 a.m.

172. SYMPOSIUM: Care and Use of Laboratory Animals

Cosponsored by the Animal Care Panel and the Federation

THURS. A.M.—CONVENTION HALL, ROOM 20

Chairman: B. J. Cohen

9:00 **1785.** Introduction. B. J. COHEN. *UCLA, Office of Animal Care.*

9:05 **1786.** Choice of experimental animals for research. B. SCHMIDT-NIELSEN. *Duke Univ.*

9:35 **1787.** Quality in laboratory animals and efficiency of research. J. CASS. *Univ. of Cincinnati.*

10:05 **1789.** Training animal technicians in laboratory animal care. L. R. CHRISTENSEN. *Bellevue Med. Ctr.*

10:25 **1790.** Graduate and professional training in laboratory animal care. T. B. CLARKSON. *Bowman Gray Sch. of Med.*

10:45 **1791.** Problem of exercise in maintenance of dogs in research laboratories. N. R. BREWER. *Univ. of Chicago.*

11:05 **1792.** Space requirements in design of facilities for the small animal species. W. T. S. THORP. *Univ. of Minnesota.*

11:25 Discussion and questions.

173. Muscle II

THURS. A.M.—CONVENTION HALL, ROOM B

Chairman: J. Gergely

9:00 **1793.** Glycerol-extracted vascular smooth muscle. T. MARIANI* AND D. F. BOHR. *Univ. of Michigan.* (Physiol.)

9:15 **1794.** Activation of the contractile mechanism in isolated myofibrils. R. J. PODOLSKY AND C. E. HUBERT. *Naval Med. Res. Inst.* (Physiol.)

9:30 **1795.** Dependence of superprecipitation of actomyosin on the concentration of ionized calcium. A. WEBER* AND S. WINICUR.* *Inst. for Muscle Disease.* (Physiol.)

9:45 **1796.** Inhibition of contractile protein ATPase activity by epinephrine oxidized via adrenochrome. M. A. INCHIOSA, JR.* AND A. STONE FREEDBERG. *Harvard Med. Sch. and Beth. Israel Hosp* (Physiol.)

10:00 **1797.** Actomyosin-ATPase, clearing and superprecipitation. K. MARUYAMA* AND J. GERGELY. *Massachusetts Gen. Hosp. and Harvard Med. Sch.* (Biochem.)

10:15 **1798.** Binding of ATP to globular actin. RICHARD C. STROHMAN.* *Univ. of California, Berkeley.* (Physiol.)

10:30 **1799.** Removal of the bound nucleotide of actin. M. BARANY,* B. NAGY,* F. FINKELMAN* AND A. CHRAMBACH.* *Inst. for Muscle Disease.* (Physiol.)

10:45 **1800.** Binding of nucleosidepolyphosphates to actin. A. MARTONOSI.* *Retina Fndn.* (Biochem.)

174. Neuropharmacology VIII

THURS. A.M.—CONVENTION HALL, ROOM A

Chairman: M. H. Seevers

9:00 **1801.** An investigation of a possible site of action of chlorpromazine. JACOB R. RAITT,* JOHN W. NELSON AND ARTHUR TYE.* *Ohio State Univ.* (Pharmacol.)

9:15 **1802.** Evidence for a brain-stem action of chlorpromazine on some motor reflexes. ROY D. HUDSON* AND E. F. DOMINO. *Univ. of Michigan.* (Pharmacol.)

9:30 **1803.** Stimulation of pituitary-adrenal axis of rat by chlorpromazine and congeners. R. L. SMITH,* R. P. MAICKEL* AND B. B. BRODIE. *Natl. Insts. of Health.* (Pharmacol.)

9:45 **1804.** Effects of EPN and malathion on reticular formation stimulation. SEWARD A. RIDLON* AND ALEXANDER G. KARCZMAR. *Loyola Univ.* (Pharmacol.)

10:00 **1805.** Evidence for a nicotinic receptor in the central nervous system related to EEG arousal. DONALD E. KNAPP* AND E. F. DOMINO. *Univ. of Michigan.* (Pharmacol.)

10:15 **1806.** Comparative EEG study of the analeptic effect of dichloroisoproterenol (DCI) and amphetamine. LEONIDE GOLDSTEIN* AND CARLOS MUNOZ.* *Emory Univ.* (Pharmacol.)

10:30 **1807.** Antagonism of phenothiazine derivatives to the EEG effects of physostigmine and amphetamine. EDWARD J. WESTERBEKE* AND RICHARD P. WHITE. *Univ. of Tennessee Med. Units.* (Pharmacol.)

10:45 **1808.** Peripheral and central effects of N-allylnoratropine. LESTER F. SOYKA* AND K. R. UNNA. *Univ. of Illinois.* (Pharmacol.)

11:00 **1809.** Central action of megimide on respiration. F. F. KAO,* W. K. LI,* G. MCCOY* AND M. H. HARMEL.* *State Univ. of New York at Brooklyn.* (Pharmacol.)

11:15 **1810.** Effect of high concentrations of carbon dioxide on the amygdala and neuronally isolated cerebral cortex. A. MAITI* AND E. F. DOMINO. *Univ. of Michigan.* (Pharmacol.)

11:30 **1811.** Central effects of xanthiol, a new psychotherapeutic drug. WILLIAM H. FUNDERBURK, ANNA B. DRAKONTIDES* AND ALEXANDER SCRIABINE.* *Chas. Pfizer.* (Pharmacol.)

175. Estrogens

THURS. A.M.—CONVENTION HALL, ROOM 21

Chairman: M. S. Goldstein

9:00 **1812.** Fate of estradiol-17H^3 in rat tissue. N. N. SAHA,* J. W. FLESHER,* H. I. JACOBSON* AND E. V. JENSEN. *Univ. of Chicago.* (Biochem.)

9:15 **1813.** Effect of estradiol on glucose metabolism in rat uterus. R. M. MACLEOD* AND V. P. HOLLANDER. *Univ. of Virginia.* (Biochem.)

9:30 **1814.** Protein repletion following estradiol treatment. R. M. STAGG.* *Rutgers, The State Univ.* (Physiol.)

9:45 **1815.** Time course of α-aminoisobutyric acid-1-C^{14} uptake by estrogen-stimulated rat uterus. J. R. DANIELS* AND S. M. KALMAN. *Stanford Univ.* (Pharmacol.)

10:00 **1816.** Estrogen effect on amino acid incorporation into protein. S. M. KALMAN AND P. M. OPSAHL.* *Stanford Univ.* (Pharmacol.)

10:15 **1817.** Hormone antagonists and female reproductive system. J. H. LEATHEM AND W. C. ADAMS.* *Rutgers, The State Univ.* (Physiol.)

10:30 **1818.** Glycyrrhetinic acid on response of female reproductive tract to sex steroids. S. D. KRAUS. *Brooklyn Coll. of Pharmacy.* (Physiol.)

10:45 **1819.** Estrogen effect on electrolyte and water balance in the rat. M. NOCENTI* AND L. J. CIZEK. *Columbia Univ.* (Physiol.)

11:00 **1820.** Influence of steroid hormones and histamine on growth in uterine epithelium. E. SPAZIANI. *Univ. of Iowa.* (Physiol.)

11:15 **1821.** Threshold and pattern of electroshock convulsions during estrous cycle in the rat. D. E. WOOLLEY,* P. S. TIMIRAS, H. H. SREBNIK* AND A. SILVA.* *Univ. of California, Berkeley.* (Physiol.)

Intersociety Sessions—Thursday, 1:30 p.m.

176. Atherosclerosis IV: Lipid Metabolism

THURS. P.M.—CONVENTION HALL, ROOM B

Chairmen: J. G. Coniglio; O. A. Roels

1:30 **1822.** Differences in the cholesterol ester fatty acid pattern in human maternal and cord serum. JAMES E. MULDREY,* JAMES G. HAMILTON,* JULIAN A. WELLS,* JOSEPH R. SWARTWOUT* AND O. NEAL MILLER. *Tulane Univ.* (Nutr.)

1:45 **182.** Changes in polyunsaturated fatty acids in plasma and erythrocytes during short-term administration of fat emulsion. J. M. IACONO,* J. F. MUELLER AND H. HOWARD.* *Univ. of Cincinnati.* (Nutr.)

2:00 **1824.** Effect of age and dietary fat on rapidly migrating serum protein component(s). FLORENCE L. LAKSHMANAN.* *U. S. Dept. of Agriculture.* (Nutr.)

2:15 **1825.** Changes in fatty acid composition in skeletal muscle of rats induced by varying the lipid in the diet. BERNARD CENTURY,* L. A. WITTING,* C. C. HARVEY* AND M. K. HORWITT. *Elgin State Hosp.* (Nutr.)

2:30 **1826.** Influence of medium chain and long chain triglycerides on fatty acid composition of adipose tissue and liver. H. KAUNITZ, C. A. SLANETZ* AND R. E. JOHNSON.* *Columbia Univ.* (Pathol.)

2:45 **1827.** Effect of egg oil, cholesterol, choline and cholic acid on plasma and liver lipids. GLADYS A. EMERSON AND JANE B. WALKER.* *UCLA.* (Nutr.)

3:00 **1828.** Simultaneous comparison in vivo of removal rates of fatty acids from dog plasma. J.-P. DUSTIN,* D. S. FREDERICKSON,* P. LAUDAT* AND K. ONO.* *Natl. Insts. of Health.* (Physiol.)

3:15 **1829.** Linoleate, plasma cholesterol and atheroma in the rat. D. A. BEELER* AND F. W. QUACKENBUSH. *Purdue Univ.* (Nutr.)

3:30 **1830.** Effect of dietary fat on oxidation of cholesterol by rat liver mitochondria. D. KRITCHEVSKY, M. C. COTTRELL,* M. W. WHITEHOUSE* AND E. STAPLE. *Wistar Inst. and Univ. of Pennsylvania.* (Biochem.)

3:45 **1831.** Effect of dietary fats and marine oil fractions on cardiovascular tissues. JAMES J. PEIFER* AND W. O. LUNDBERG. *Univ. of Minnesota.* (Biochem.)

177. Neuropharmacology IX

THURS. P.M.—CONVENTION HALL, ROOM A

Chairman: E. H. Dearborn

1:30 **1832.** Estimation of metanephrine and normetanephrine in urine. ELIZABETH R. B. SMITH AND H. WEIL-MALHERBE. *Natl. Inst. of Mental Health and St. Elizabeths Hosp.* (Biochem.)

1:45 **1833.** 6-Hydroxylation of tryptamine and derivatives: enzymatic process. STEPHEN SZARA* AND FRANCES PUTNEY.* *Natl. Inst. of Mental Health.* (Pharmacol.)

2:00 **1834.** Breakdown of norepinephrine in rat tissue homogenates. J. L. BOROWITZ* AND J. H. MERRITT.* *Brooks Air Force Base.* (Physiol.)

2:15 **1835.** Possible rapid synthesis of norepinephrine from dihydroxyphenylethylamine (dopamine). WALTER M. BOOKER, WILLIAM L. WEST,* A. ANDERSON* AND J. BLUITT.* *Howard Univ.* (Pharmacol.)

2:30 **1836.** Effect of α-methylamino acids on catecholamines and serotonin. S. M. HESS, R. H. CONNAMACHER* AND S. UDENFRIEND. *Natl. Heart Inst.* (Pharmacol.)

2:45 **1837.** Effects of pyrogallol on brain catecholamines. H. WEIL-MALHERBE, HERBERT S. POSNER AND GRACE R. BOWLES.* *Natl. Inst. of Mental Health and St. Elizabeths Hosp.* (Biochem.)

3:00 **1838.** Combined use of α-methyl meta-tyrosine and reserpine to associate norepinephrine with excitation and serotonin with sedation. R. KUNTZMAN,* E. COSTA, G. L. GESSA,* C. HIRSCH* AND B. B. BRODIE. *Natl. Insts. of Health.* (Pharmacol.)

3:15 **1839.** DOPA, dopamine, norepinephrine, epinephrine and serotonin mouse brain levels after N-methyl-N-benzyl-2-propynylamine HCl and l-DOPA. R. G. WIEGAND* AND J. E. PERRY.* *Abbott Labs.* (Pharmacol.)

3:30 **1840.** Reversibly-acting reserpine analogs: pharmacological and biochemical properties of compounds obtained by substituting an ether for the ester linkage. E. CUENCA,* R. KUNTZMAN,* E. COSTA AND B. B. BRODIE. *Natl. Insts. of Health.* (Pharmacol.)

3:45 **1841.** Effect of intracarotid serotonin on the spinal reflexes. W. P. KOELLA AND J. CZICMAN. *Worcester Fndn. for Exper. Biol.* (Physiol.)

4:00 **1842.** Cerebral synaptic inhibitory action of in situ serotonin. AMEDEO S. MARRAZZI, E. ROSS HART, MELVIN I. GLUCKMAN AND ZOLA HOROVITZ.* *VA Res. Labs. in Neuropsychiatry.* (Pharmacol.)

4:15 **1843.** Serotonin and transmission in sympathetic ganglia. EMANUEL C. HERTZLER. *Washington Univ.* (Physiol.)

178. Adrenal Cortex I

THURS. P.M.—CONVENTION HALL, ROOM 20

Chairman: J. O. Davis

1:30 **1844.** Evidence for secretion of an aldosterone stimulating hormone by the kidney. J. O. DAVIS, C. C. J. CARPENTER,*

C. R. AYERS,* J. E. HOLMAN* AND R. C. BAHN. *Natl. Heart Inst. and Mayo Clinic.* (Physiol.)

1:45 **1845.** Effects of nephrectomy on aldosterone secretion in dogs with thoracic inferior vena cava constriction. C. R. AYERS,* J. O. DAVIS AND C. C. J. CARPENTER.* *Natl. Heart Inst.* (Physiol.)

2:00 **1846.** Pressor and aldosterone-stimulating activity of kidneys from normal hypophysectomized dogs. W. F. GANONG AND P. J. MULROW.* *Univ. of California, San Francisco, VA Hosp., West Haven and Yale Univ.* (Physiol.)

2:15 **1847.** Relation of renin, hypertensin II and experimental renal hypertension to aldosterone secretion. C. C. J. CARPENTER,* J. O. DAVIS AND C. R. AYERS.* *Natl. Heart Inst.* (Physiol.)

2:30 **1848.** Anti-inflammatory activity in rats of Δ^1-17α-methyltestosterone and corticosteroids. A. A. RENZI, M. STEIN,* P. REILLY* AND V. DUBE.* *Ciba Pharmaceut. Prod.* (Physiol.)

2:45 **1849.** Steroidogenesis in adrenal tumors of mice. N. P. CHRISTY* AND F. G. HOFMANN. *Columbia Univ.* (Physiol.)

3:00 **1850.** Sex differences in effects of stilbestrol on pituitary and adrenal secretion in rats. J. I. KITAY.* *Univ. of Virginia.* (Physiol.)

3:15 **1851.** Release of adrenal steroids during asphyxia. N. CASTAGNOLI, JR.,* A. GOLDFIEN AND W. F. GANONG. *Univ. of California, San Francisco.* (Physiol.)

3:30 **1852.** Ketonic C-27 intermediate in biosynthesis of pregnenolone from 20α-hydroxycholesterol. I. D. K. HALKERSTON* AND O. HECHTER. *Worcester Fndn. for Exper. Biol.* (Physiol.)

3:45 **1853.** Failure of cortisol to increase hepatic alanine transaminase activity in pregnant rats. H. R. HARDING,* F. ROSEN* AND C. A. NICHOL. *Roswell Park Mem. Inst.* (Pharmacol.)

179. Blood Clotting IV

THURS. P.M.—SHELBURNE, CORAL REEF ROOM

Chairmen: W. F. Bale; A. P. Fletcher

1:30 **1854.** Effects of exercise on the coagulation and fibrinolytic systems. TED P. BOND,* D. R. CELANDER* AND M. MASON GUEST. *Univ. of Texas.* (Physiol.)

1:45 **1855.** Fibrinolytic activity of vascular intima. DALE MESSER,* D. R. CELANDER,* AND M. MASON GUEST. *Univ. of Texas.* (Physiol.)

2:00 **1856.** Inhibition of fibrinolysis in rat tumors by epsilon aminocaproic acid. W. F. BALE, I. L. SPAR, RUTH L. GOODLAND* AND MARY J. IZZO.* *Univ. of Rochester.* (Physiol.)

2:15 **1857.** Effects of epsilon-aminocaproic acid on the post-mortem fluidity of blood. RICHARD G. COOPER,* D. R. CELANDER* AND M. MASON GUEST. *Univ. of Texas.* (Physiol.)

2:30 **1858.** Chemical determination of epsilon aminocaproic acid, an inhibitor of plasminogen activation. ALAN J. JOHNSON* AND LORANT SKOZA.* *NYU-Bellevue Med. Ctr.* (*Physiol.*)

2:45 **1859.** Absorption, distribution and excretion of epsilon aminocaproic acid (EACA). G. P. MCNICOL,* A. P. FLETCHER, N. ALKJAERSIG* AND S. SHERRY. *Washington Univ.* (Physiol.)

3:00 **1860.** Anti-fibrinolytic properties of serotonin. H. SANDBERG,* G. TSITOURIS,* S. BELLET, J. SCHRAEDER* AND L. FEINBERG.* *Philadelphia Gen. Hosp.* (Physiol.)

3:15 **1861.** Effects of nicotine infusions on fibrinolytic parameters in the dog. L. FEINBERG,* H. SANDBERG,* G. TSITOURIS,* S. BELLET AND J. SCHRAEDER.* *Philadelphia Gen. Hosp.* (Physiol.)

3:30 **1862.** Promotion of fibrinolytic activity by synthetic compounds. K. N. VON KAULLA AND R. L. SMITH. *Univ. of Colorado and Belle Bonfils Mem. Blood Bank.* (Physiol.)

3:45 **1863.** Effects of aspergillin O in humans. MUSTAFA KARACA,* MARIO STEFANINI AND ROSE MELE.* *St. Elizabeth Hosp. and Tufts Univ.* (Pathol.)

180. Cell and Tissue Culture III

THURS. P.M.—DENNIS, CRYSTAL BALLROOM

Chairman: T. T. Puck

1:30 **1864.** Effect of myelotoxic drugs on incorporation of H^3 thymidine and uridine by bone marrow cells, in vitro. ANTHONY V. PISCIOTTA,* JOYCE KOHLDAHL* AND MICHAEL J. MALLY.* *Marquette Univ.* (Biochem.)

1:45 **1865.** Selective inhibition of S-91 mouse melanoma by phenyl lactate, in vitro. H. DEMOPOULOS* AND M. CLEMENTS.* *New York Univ.* (Immunol.)

2:00 **1866.** Effect of mitomycin on mammalian cells in culture. E. REICH,* A. J. SHATKIN,* R. FRANKLIN* AND E. L. TATUM. *Rockefeller Inst.* (Biochem.)

2:15 **1867.** Nature of statolon, an antiviral agent. G. W. PROBST* AND W. J. KLEINSCHMIDT. *Lilly Res. Labs.* (Biochem.)

2:30 **1868.** Effect of p-fluorophenylalanine on poliovirus replication. LEON LEVINTOW AND JAMES E. DARNELL, JR. *Natl. Insts. of Health.* (Biochem.)

2:45 **1869.** Chromatographic separation, and characteristics of nucleic acids from HeLa cells. L. PHILIPSON.* *Rockefeller Inst.* (Immunol.)

3:00 **1870.** Chromatography of phospholipids of HeLa cell infected with poliomyelitis virus. WILL SANDSTROM,* W. E. CORNATZER, AND ROBERT G. FISCHER.* *Univ. of North Dakota.* (Nutr.)

3:15 **1871.** Spontaneous tumors in the germfree mammal. THOMAS G. WARD. *Microbiological Assoc.* (Immunol.)

3:30 **1872.** Cell structure of differentiated tumors. V. BUONOSSISI* AND G. SATO.* *Brandeis Univ.* (Immunol.)

3:45 **1873.** Serial heterotransplantation of a human adenocarcinoma, H.Ad. #1, in the cheek pouch of nonconditioned adult hamsters. DAVID S. YOHN,* W. MCD. HAMMON AND ROBERT W. ATCHISON.* *Univ. of Pittsburgh.* (Immunol.)

4:00 **1874.** Tumorigenesis with phenolic extracts of wild and domestic rabbit papilloma tissue and of partially purified Shope papilloma virus. YOHEI ITO.* *Univ. of Washington.* (Immunol.)

4:15 **1875.** Transformation of chick embryo cells in culture by Rous sarcoma virus—histochemical studies. E. GAMBETTA HAMPTON* AND MAXWELL L. EIDINOFF.* *Sloan-Kettering Inst.* (Biochem.)

4:30 **1876.** Localization of infectious virus and viral antigen in chick embryo cells infected with Rous sarcoma virus. PETER K. VOGT* AND HARRY RUBIN.* *Univ. of California.* (Immunol.)

Physiology Society Sessions—Thursday, 9:00 a.m.

181. Hyperthermia; Heat

THURS. A.M.—CONVENTION HALL, ROOM 13

Chairman: S. Robinson

9:00 **1877.** Effects of hyperthermia on blood volume and total peripheral resistance. T. COOPER, V. L. WILLMAN* AND C. R. HANLON.* *St. Louis Univ.*

9:15 **1878.** Heat exchange through the skin in tail of muskrat (Ondatra zibethicus). K. JOHANSEN.* *Arctic Aeromed. Lab.*

9:30 **1879.** Peripheral and central mediation of sweating and cutaneous vascular responses in man. R. O. RAWSON* AND W. C. RANDALL. *Loyola Sch. of Med.*

9:45 **1880.** Relationship of sweating, skin temperature and cutaneous blood flow in calf and forearm. L. C. SENAY, JR.,* L. D. PROKOP,* L. CRONAU* AND A. B. HERTZMAN. *St. Louis Univ.*

10:00 **1881.** Effect of hyperthermia on pCO_2, (HCO_3), pH, and lactate concentration of arterial blood and cisternal cerebrospinal fluid in dogs at constant end-tidal pCO_2. S. C. ALEXANDER,* R. D. WORKMAN* AND C. J. LAMBERTSEN. *Univ. of Pennsylvania.*

10:15 **1882.** Physiological reactions to repeated muscular exercise at various work loads and in various environments. G. J. STOPPS,* L. BROUHA AND P. E. SMITH, JR.* *Haskell Lab.*

10:30 **1883.** Evaluation of stress of muscular work in various environments by heart rate recovery curves. M. E. MAXFIELD AND L. BROUHA. *Haskell Lab.*

10:45 **1884.** Transportable solar chamber studies on thermal effects of solar radiation. D. H. K. LEE AND J. A. VAUGHAN.* *Quartermaster Res. & Engin. Command, Natick.*

11:00 **1885.** Thermistor system for measuring thermal gradients. A. M. STOLL. *USN Air Develop. Ctr., Johnsville.*

11:15 **1886.** Microwave heating of human skin. E. HENDLER* AND J. D. HARDY. *Naval Air Material Ctr. and Univ. of Pennsylvania.*

11:30 **1887.** Standardized alcohol flame burns in mice. C. L. FOX, JR. *Columbia Univ.* (Immunol.)

182. Hemodynamics

THURS. A.M.—TRAYMORE, AMERICAN ROOM

Chairman: A. C. Burton

9:00 **1888. INTRODUCTORY REMARKS.** Levels in hemodynamic theory. A. C. BURTON. *Univ. of Western Ontario Med. Sch.*

9:30 **1889.** Influence of velocity gradient upon blood viscosity. R. E. WELLS, JR.* AND E. W. MERRILL.* *Harvard Med. Sch., Peter Bent Brigham Hosp. and MIT.*

9:45 **1890.** Significance of velocity component in blood flow determinations based on electrical impedance recordings. F. LIEBMAN, J. PEARL* AND L. KUSSICK.* *New York Univ. Dent. Coll. and Guggenheim Fndn. Inst. for Dent. Res.*

10:00 **1891.** Decrease in venous return caused by venous pulsation. A. C. GUYTON AND O. CARRIER.* *Univ. of Mississippi Med. Ctr.*

10:15 **1892.** Pressure-volume curves in live, intact dogs. T. Q. RICHARDSON,* J. O. STALLINGS* AND A. C. GUYTON. *Univ. of Mississippi Med. Ctr.*

10:30 **1893.** Drug-induced changes of blood flow patterns in dog thoracic aorta. P. A. KOT* AND J. C. ROSE. *Georgetown Sch. of Med. and Dent.*

10:45 **1894.** Continuous wave ultrasonic flowmeter. W. C. ZARNSTORFF* AND C. A. CASTILLO.* *Univ. of Wisconsin.*

11:00 **1895.** Catheter tip flowmeter for measurement of blood flow in pulmonary artery of intact anesthetized dogs. H. P. PIEPER. *Ohio State Univ.*

11:15 **1896.** Pressure pulse contour changes in different arterial beds. J. E. MEISNER.* *Med. Coll. of Georgia.*

183. Peripheral Circulation II

THURS. A.M.—TRAYMORE, TRAYMORE ROOM

Chairman: H. D. Green

9:00 **1897.** Regional circulation in intact dog colon. M. BACANER* AND M. POLLYCOVE.* *Univ. of California, Berkeley.*

9:15 **1898.** Splanchnic circulation in histamine hypotension. S. CHIEN* AND L. KRAKOFF.* *Columbia Univ.*

9:30 **1899.** Effect of gastric hypothermia on estimated hepatic blood flow and splanchnic blood volume in dog. S. L. WANGENSTEEN,* R. C. ORAHOOD,* W. LUKE* AND W. V. HEALEY.* *Presbyterian Hosp. and Columbia Univ.*

9:45 **1900.** Factors influencing gastric blood flow in normal cattle. A. F. SELLERS, C. E. STEVENS* AND R. H. DUNLOP.* *Cornell Univ. and Univ. of Minnesota.*

10:00 **1901.** Slow periodic variations in splanchnic blood flow. J. IRIUCHIJIMA.* *UCLA.*

10:15 **1902.** Dynamics of single injection and constant infusion of colloidal chromic phosphate; relation of splanchnic plasma volume. E. L. DOBSON AND F. P. MUSTELL.* *Univ. of California, Berkeley.*

10:30 **1903.** Effect of serotonin on regional metabolism. W. C. SHOEMAKER,* H. KLECKNER,* M. PERLOW* AND G. GALANSINO.* *Michael Reese Hosp.* (Biochem.)

10:45 **1904.** Simultaneous determination, by dye measurements, of vascular volume and conductance in dog's paw. H. D. GREEN, C. E. RAPELA AND G. LIN.* *Bowman Gray Sch. of Med.*

11:00 **1905.** Cerebral venous blood flow. C. E. RAPELA, P. MACHOWICZ AND H. D. GREEN. *Bowman Gray Sch. of Med.*

11:15 **1906.** Brain PO_2 in exposures to O_2 at high pressure. J. W. BEAN. *Univ. of Michigan.*

11:30 **1907.** Effects of simultaneous ligation of both common carotid and vertebral arteries. D. F. M. BUNCE II.* *Tulane Univ.*

11:45 **1908.** Relationship of canine cerebral blood flow to arterial pH. P. NOVACK,* F. ARIZA-MENDOZA,* D. DEARMAS,* G. BARTOLUCCI,* J. FAUST* AND A. USMAN.* *Hahnemann Med. Coll. and Hosp.*

184. CNS and Behavior I

THURS. A.M.—TRAYMORE, ROSE ROOM

Chairman: J. M. Brookhart

9:00 **1909.** Effect of brain-stem lesions on ocular torsion in cats. S. TOCZEK* AND J. E. HYDE. *Univ. of California Med. Ctr.*

9:15 **1910.** Artificial clamp for pupil oscillations. L. STARK. *MIT.*

9:30 **1911.** Photopupillary kinetics in normal man. M. ALPERN, D. W. MCCREADY, JR.* AND L. BARR.* *Univ. of Michigan.*

9:45 **1912.** Effect of hypothalamic lesions on spontaneous locomotor activity of rat. W. E. GLADFELTER.* *West Virginia Univ. Med. Ctr.*

10:00 **1913.** Perceptual effects of tectal lesions. R. E. MYERS. *Johns Hopkins Sch. of Med.*

10:15 **1914.** Memory-defects produced by frontal lobe injury in the monkey. G. D. DAVIS AND W. H. DEAN.* *Louisiana State Univ.*

10:30 **1915.** Behavior of decerebellate cats with or without neocortex in chronic state. G. H. WANG AND W. I. WELKER. *Univ. of Wisconsin.*

10:45 **1916.** Light discrimination after additional brain damage in monkeys with bilateral striatectomy. P. PASIK,* T. PASIK* AND M. B. BENDER. *Mt. Sinai Hosp.*

11:00 **1917.** Effects of early postnatal hemispherectomy in cats. B. M. WENZEL,* R. D. TSCHIRGI AND J. L. TAYLOR, JR.* *UCLA and Univ. of Illinois.*

11:15 **1918.** Effects of sleep on photically evoked responses in man. E. V. EVARTS. *Natl. Insts. of Health.*

11:30 **1919.** Cortical recruitment and behavioral sleep induced by basal forebrain stimulation. M. B. STERMAN AND C. D. CLEMENTE. *UCLA and Sepulveda VA Hosp.*

11:45 **1920.** Subcortical relay of interhemispheric delayed response. L. T. RUTLEDGE AND T. KENNEDY.* *Univ. of Michigan and Univ. of Washington.*

185. Blood II

THURS. A.M.—TRAYMORE, BELVEDERE ROOM

Chairman: P. Dow

9:00 **1921.** Characterization of reticulo-endothelial stimulating agent in zymosan. S. J. RIGGI* AND N. R. DI LUZIO. *Univ. of Tennessee.*

9:15 **1922.** Two mechanisms for reticulo-endothelial system stimulation. L. S. KELLY AND E. L. DOBSON. *Univ. of California, Berkeley.*

9:30 **1923.** Leukocyte release from perfused isolated femurs of rats. B. S. DORNFEST,* J. LOBUE,* A. S. GORDON AND H. QUASTLER.* *New York Univ. and Brookhaven Natl. Lab.*

9:45 **1924.** Technique for separation of human leukocytes. P. LALEZARI.* *Montefiore Hosp., New York.*

10:00 **1925.** DNA synthesis time of myelocyte in dog. M. A. MALONEY,* C. L. WEBER* AND H. M. PATT. *Argonne Natl. Lab.*

10:15 **1926.** Thymus in lymphocyte production. J. C. SCHOOLEY* AND L. S. KELLY. *Univ. of California, Berkeley.*

10:30 **1927.** Stimulation of platelet production by serum of bled rats. T. T. ODELL, JR. AND T. P. MCDONALD.* *Oak Ridge Natl. Lab.*

10:45 **1928.** Transfer of thrombopoietic factor. B. SPECTOR.* *Sloan-Kettering Inst.*

Physiology Society Sessions—Thursday, 1:30 p.m.

186. Active Transport II

THURS. P.M.—CONVENTION HALL, ROOM 21

Chairman: D. C. Tosteson

1:30 **1929.** Uridine transport in Ehrlich ascites cells. J. A. JACQUEZ. *Sloan-Kettering Inst. and Cornell Univ.*

1:45 **1930.** Potassium fluxes and glycine transport in Ehrlich mouse ascites tumor cell; effect of pyridoxal. H. G. HEMPLING. *Cornell Univ. Med. Coll.*

2:00 **1931.** Upper limit for number of sugar transport sites in red cell surface. P. G. LEFEVRE. *Brookhaven Natl. Lab. and Univ. of Louisville.*

2:15 **1932.** Stoichiometry of active Na^+ and K^+ transport to energy-rich phosphate breakdown in human erythrocytes. A. K. SEN* AND R. L. POST. *Vanderbilt Univ. Med. Sch.*

2:30 **1933.** Phosphomonoesterase and Na + K activated ATP-ase. D. C. TOSTESON, M. P. BLAUSTEIN* AND R. H. MOULTON.* *Washington Univ.*

2:45 **1934.** Sodium effluxes from muscle. L. J. MULLINS AND A. S. FRUMENTO.* *Univ. of Maryland.*

3:00 **1935.** Ionic permeability of cat heart papillary muscle. E. PAGE.* *Harvard Med. Sch.*

3:15 **1936.** Cation interactions in frog muscle. R. A. SJODIN. *Univ. of Maryland.*

3:30 **1937.** Tissue buffering in rat smooth muscle and myocardium. T. A. ROGERS AND K. KOLL.* *Stanford Univ.*

3:45 **1938.** Electrolyte shifts in uterine smooth muscle on incubation. C. Y. KAO AND H. R. SALOMON.* *State Univ. of New York.*

4:00 **1939.** Bound sodium in glycerated skeletal muscle. R. SUSAT* AND J. C. VANATTA. *Univ. of Texas Southwestern Med. Sch.*

4:15 **1940.** Potassium flux in hepatomas and normal liver. E. W. HUMPHREY* AND J. A. JOHNSON. *Minneapolis VA Hosp. and Univ. of Minnesota.*

187. Reproduction

THURS. P.M.—CONVENTION HALL, ROOM 13

Chairman: R. O. Greep

1:30 **1941.** Quantitation of shift in metabolism in pullets at onset of lay. L. F. WOLTERINK. *Michigan State Univ. and Michigan Agric. Exper. Sta.*

1:45 **1942.** Electrical potentials between genital tract and abdominal wall. K. E. GREENWALT* AND H. A. LINDSAY.* *West Virginia Univ. Med. Ctr.*

2:00 **1943.** Inhibition of spermatogenesis. W. O. NELSON AND D. J. PATANELLI.* *Rockefeller Inst.*

2:15 **1944.** Effect of N,N′-bis (dichloroacetyl)1,8-octamethylenediamine on reproductive capacity of adult male rats. G. O. POTTS,* D. F. BURNHAM* AND A. L. BEYLER.* *Sterling-Winthrop Res. Inst.*

2:30 **1945.** Decapacitation factor present in rabbit seminal plasma. J. M. BEDFORD.* *Worcester Fndn. for Exper. Biol.*

2:45 **1946.** Effects of inbreeding on Syrian hamsters. R. WHITNEY. *Bio-Research Inst.*

3:00 **1947.** Isolation of porcine ovarian relaxin. H. COHEN. *Princeton Labs.*

3:15 **1948.** Action of relaxin on myometrium of rat. M. R. CALLANTINE,* R. C. SANBORN AND M. X. ZARROW. *Purdue Univ.*

3:30 **1949.** Mechanism of diphenylparaphenylenediamine

effect in rats. S. CARSON AND B. L. OSER. *Food and Drug Res. Labs., Maspeth, New York.* (Pharmacol.)

3:45 **1950.** Rat amniotic and yolk fluids. J. N. BARKER. *Jefferson Med. Coll.*

4:00 **1951.** Glucose-6-phosphate dehydrogenase levels in appendages of developing chick embryo. W. C. MAHAFFEY.* *Univ. of Texas Med. Branch.*

4:15 **1952.** Induction of mammary secretion in pregnant rats and rabbits by hydrocortisone acetate. P. K. TALWALKER,* C. S. NICOLL* AND J. MEITES. *Michigan State Univ.*

4:30 **1953.** Effect of thyroxine on experimental mammary gland growth. R. C. MOON.* *Univ. of Tennessee.*

188. Capillary Circulation

THURS. P.M.—TRAYMORE, AMERICAN ROOM

Chairman: H. S. Mayerson

1:30 **1954. INTRODUCTORY REMARKS.** Capillary circulation. H. S. MAYERSON. *Tulane Univ. Sch. of Med.*

2:00 **1955.** Transcapillary and transperitoneal movements of T-1824 albumin in rabbits. R. E. SEMPLE AND E. W. WIGHT.* *Queen's Univ., Kingston, Ontario.*

2:15 **1956.** Distribution of labeled erythrocytes in rat adipose tissue. M. M. WIDELITZ* AND F. X. HAUSBERGER. *Jefferson Med. Coll.*

2:30 **1957.** Demonstration and measurement of permeability changes across mesothelial membranes. J. CASCARANO,* A. D. RUBIN* AND B. W. ZWEIFACH. *New York Univ. Med. Ctr.*

2:45 **1958.** Capillary collapsibility; determinant of pulmonary vascular resistance. S. RODBARD AND K. KURAMOTO.* *Univ. of Buffalo.*

3:00 **1959.** Degree of lung inflation and capillary filling. D. F. PROCTOR AND H. YAMABAYASHI.* *Johns Hopkins Univ.*

3:15 **1960.** Time concentration curves of T-1824 and I^{131}-labeled proteins in plasma and lymph of intact dogs. C. H. BAKER. *Med. Coll. of Georgia.*

3:30 **1961.** Influence of electrical stimulation of brain on tissue uptake of Rb^{86}. N. P. CLARKE,* R. F. RUSHMER AND O. A. SMITH. *Univ. of Washington.*

3:45 **1962.** Gas exchange vessels in cat lung. N. C. STAUB.* *Univ. of California, San Francisco.*

189. Regulation of Respiration

THURS. P.M.—TRAYMORE, TRAYMORE ROOM

Chairman: G. F. Filley

1:30 **1963.** Relationship between apneustic respiration and arterial blood carbon dioxide tension in the cat. R. L. KATZ.* *Columbia Univ.*

1:45 **1964.** Steady and unsteady state analysis of ventilatory response to exercise. J. H. AUCHINCLOSS, JR.,* R. GILBERT* AND J. S. SIPPLE.* *State Univ. of New York Upstate Med. Ctr. and Syracuse VA Hosp.*

2:00 **1965.** Oscillating respiratory control in Cheyne-Stokes respiration. R. L. LANGE* AND H. H. HECHT. *Univ. of Utah.*

2:15 **1966.** Dynamics of change in respiration and arterial blood and CSF acid base parameters during administration and withdrawal of CO_2. C. J. LAMBERTSEN, H. WOLLMAN* AND R. GELFAND.* *Univ. of Pennsylvania.*

2:30 **1967.** Pulmonary arterial P_{CO_2} and ventilation in man. R. L. RILEY, R. S. ROSS AND B. ARMSTRONG.* *Johns Hopkins Univ. and Univ. of Maryland.*

2:45 **1968.** Respiratory effects of carbon dioxide administration and vagal block after injection of gamma-aminobutyric acid. C. R. BRASSFIELD AND R. L. SEALBY.* *Univ. of Michigan.*

3:00 **1969.** Influence of γ-aminobutyric acid (GABA) on vagal respiratory reflexes. J. A. SCHNEIDER, A. B. DRAKONTIDES* AND L. A. MULIERI.* *Chas. Pfizer.*

3:15 **1970.** Chemical control of ventilation; mean whole body intracellular pH in intact dog. E. D. ROBIN, P. A. BROMBERG* AND R. J. WILSON.* *Univ. of Pittsburgh.*

3:30 **1971.** Effect of mild hypoxia on ventilation during exercise. T. F. HORNBEIN* AND A. ROOS. *Washington Univ.*

190. CNS and Behavior II

THURS. P.M.—TRAYMORE, ROSE ROOM

Chairman: E. V. Evarts

1:30 **1972.** Nonspecific indicators of CNS damage. H. E. KING. *Univ. of Pittsburgh.*

1:45 **1973.** Availability of peripheral input to midbrain reticular formation. D. F. LINDSLEY* AND W. R. ADEY. *UCLA.*

2:00 **1974.** Visual critical flicker fusion thresholds; comparing method of limits with forced-choice variant of method of constant stimuli. J. RUTSCHMANN,* W. C. CLARK* AND R. LINK.* *New York State Psychiat. Inst. and Columbia Univ.*

2:15 **1975.** Electrical responses evoked in brain of normal animal. R. GALAMBOS AND G. C. SHEATZ. *Walter Reed Army Inst. of Res.*

2:30 **1976.** Changes in evoked potentials to background photic stimuli during conditioning. S. T. KITAI,* B. D. COHEN* AND F. MORIN. *Wayne State Univ. and Lafayettte Clinic.*

2:45 **1977.** Conditioned electrical activity of motor cortex and alterations with mesencephalic lesions. J. T. MCILWAIN* AND L. M. N. BACH. *Tulane Univ.*

3:00 **1978.** Spectra and average shapes of slow waves in hippocampal system during training. D. O. WALTER.* *UCLA.*

3:15 **1979.** Role of brain electrolytes in learning and retention. E. SACHS. *Ctr. for Brain Res., Univ. of Rochester.*

3:30 **1980.** Electrophysiology of habenulo-interpeduncular system in anesthetized cats. K. E. BIGNALL* AND R. W. DOTY. *Univ. of Michigan.*

3:45 **1981.** Blocking of "caudate-spindles" by stimulation of lateral geniculate body. N. A. BUCHWALD, G. HEUSER, C. HULL AND E. J. WYERS. *UCLA and Long Beach VA Hosp.*

4:00 **1982.** Electroencephalographic response of unrestrained rats during experimental concussion. F. H. RUDENBERG.* *Univ. of Texas.*

191. Circulation; Heart

THURS. P.M.—TRAYMORE, BELVEDERE ROOM

Chairman: A. C. Guyton

1:30 **1983.** Effects of right and left cardiac distentions on steady state abdominal contractions. J. K. TURNER.* *U. S. Army Med. Res. Lab., Ft. Knox.*

1:45 **1984.** Law of Laplace in estimation of left ventricular hypertrophy. E. KOUSHANPOUR* AND W. D. COLLINGS. *Michigan State Univ.*

2:00 **1985.** Systolic bulging of ischemic myocardium. R. MEJIA,* A. L. WALDO* AND F. KAVALER.* *State Univ. of New York.*

2:15 **1986.** Tissue hypoxia and cardiovascular function in dogs. J. R. R. BOBB AND J. M. LITTLE. *Bowman Gray Sch. of Med.*

2:30 **1987.** Relation of dog heart sounds to venous and arterial pressures. A. W. SLOAN* AND J. F. JARVIS.* *Univ. of Cape Town, South Africa.*

2:45 **1988.** 24-Hour cardiac activity of unrestrained cats. W. O. ESSLER,* G. E. FOLK, JR. AND G. E. ADAMSON.* *Univ. of Iowa.*

3:00 **1989.** Relationship of heart rate to respiration—exceptions to law of sinus arrhythmia. J. PEREZ-CRUET* AND W. H. GANTT. *VA Psychophysiol. Lab., Perry Point, Maryland.*

3:15 **1990.** Effects on heart rate of tilting at different environmental temperatures. J. FLETCHER* AND F. GIRLING. *Def. Res. Med. Labs., Toronto.*

3:30 **1991.** Response of developing vascular system of chick embryo to hyperoxia. S. C. ALLEN. *Chicago Coll. of Osteopathy.*

3:45 **1992.** Cardiac glycogen in mouse. E. R. THOMAS* AND D. K. MEYER. *Wheatley Sch., and Univ. of Missouri.*

4:00 **1993.** Methacholine and hypoxia in atrial fibrillation. F. I. H. DHANUTIRTO,* R. H. DHANUTIRTO* AND A. S. HARRIS. *Louisiana State Univ.*

4:15 **1994.** Resuscitation after fresh water drowning. J. S. REDDING,* R. A. COZINE* AND P. SAFAR. *Baltimore City Hosps.*

Physiology Society Business Meeting

THURSDAY, 4:30 P.M.—TRAYMORE, AMERICAN ROOM

Biochemistry Society Sessions—Thursday, 9:00 a.m.

192. Nucleic Acid Synthesis

THURS. A.M.—CONVENTION HALL, BALLROOM

Chairman: S. Ochoa

9:00 **1995.** Physiological role of polynucleotide phosphorylase in E. coli ML. DANIEL H. LEVIN* AND MARIANNE GRUNBERG-MANAGO.* *Institut de Biologie-Physico-Chimique.*

9:15 **1996.** Stimulation and inhibition of polynucleotide phosphorylase by polynucleotides. ROLAND F. BEERS, JR. *Johns Hopkins Univ.*

9:30 **1997.** Polyribonucleotide synthesis by S. fecalis cell membranes. PETER MCNAMARA* AND ADOLPH ABRAMS. *Univ. of Colorado.*

9:45 **1998.** Incorporation of AMP into embryonic chick liver nucleic acids. P. R. VENKATARAMAN* AND E. L. COE.* *Indiana Univ.*

10:00 **1999.** Role of DNA in incorporation of ribonucleotides into RNA. J. J. FURTH,* J. HURWITZ AND M. GOLDMANN.* *New York Univ.*

10:15 **2000.** Incorporation of nucleotides from ribonucleoside triphosphates into RNA in bacterial extracts. SEVERO OCHOA, DEBI P. BURMA,* HANS KRÖGER* AND JACQUES D. WEILL.* *New York Univ.*

10:30 **2001.** Incorporation of ribonucleotides into RNA. AUDREY STEVENS.* *St. Louis Univ.*

10:45 **2002.** Enzymatic incorporation of nucleoside triphosphates into nuclear ribonucleic acid. B. B. BISWAS* AND RICHARD ABRAMS. *Mont. fiore Hosp.*

11:00 **2003.** RNA synthesis by an enzyme preparation isolated from young pea seedlings. RU-CHIH C. HUANG* AND NIRMALA MAHESHWARI.* *California Inst. of Technology.*

11:15 **2004.** DNA polymerase formed after bacteriophage infection of E. coli—a new enzyme. H. VASKEN APOSHIAN AND ARTHUR KORNBERG. *Stanford Univ.*

11:30 **2005.** Incorporation of ribonucleotides into deoxyribonucleic acid. J. S. KRAKOW* AND E. S. CANELLAKIS. *Yale Univ.*

11:45 **2006.** DNA synthesis in chick embryo extracts. GLADYS F. MALEY AND FRANK MALEY.* *New York State Dept. of Health.*

193. Oxidative Enzymes III

THURS. A.M.—CONVENTION HALL, ROOM H

Chairman: T. P. Singer

9:00 **2007.** Isolation and properties of coupled flavo-enzymes in mitochondrial electron transport. W. R. FRISELL, J. R. CRONIN* AND C. G. MACKENZIE. *Univ. of Colorado.*

9:15 **2008.** DPNH-tetrazolium diaphorase of Mycobacterium tuberculosis. TAKUZO ODA* AND DEXTER S. GOLDMAN. *VA Hosp. and Univ. of Wisconsin.*

9:30 **2009.** Flavin component of DPNH dehydrogenase. F. M. HUENNEKENS. S. P. FELTON,* N. APPAJI RAO* AND BRUCE MACKLER. *Univ. of Washington.*

9:45 **2010.** Isolation and characterization of the DPNH dehydrogenase of the respiratory chain. S. MINAKAMI.* *Edsel B. Ford Inst. and Henry Ford Hosp.*

10:00 **2011.** Enzymatic and chemical properties of the DPNH dehydrogenase of the respiratory chain of heart. THOMAS P. SINGER AND R. L. RINGLER.* *Edsel B. Ford Inst.*

10:15 **2012.** Microsomal TPNH-cytochrome c reductase. CHARLES H. WILLIAMS, JR.* AND HENRY KAMIN. *VA Hosp. and Duke Univ.*

10:30 **2013.** Binding of flavin and pyridine nucleotides to APO-microsomal cytochrome b_5 reductase. PHILIPP STRITTMATTER. *Washington Univ.*

10:45 **2014.** TPNH-cytochrome c reductase in the mosquito. CALVIN A. LANG. *Univ. of Louisville.*

11:00 **2015.** Mode of action of yeast lactic dehydrogenase. JIMMY HINKSON AND H. R. MAHLER. *Indiana Univ.*

11:15 **2016.** Investigation of a condensation product of glyoxylate with tritiated DPN. GLADYS KRAKOW* AND BIRGIT VENNESLAND. *Univ. of Chicago.*

11:30 **2017.** Separation and properties of a TPNH-linked glyoxylic reductase from leaves. I. ZELITCH AND A. M. GOTTO.* *Connecticut Agric. Exper. Sta. and Oxford Univ.*

11:45 **2018.** TPN-linked glyceraldehyde phosphate dehydrogenase in a nonphotosynthetic tissue. C. R. BENEDICT* AND H. BEEVERS. *Brookhaven Natl. Lab. and Purdue Univ.*

194. Lipid Metabolism III

THURS. A.M.—CONVENTION HALL, STAGE

Chairman: R. J. Rossiter

9:00 **2019.** Metabolism of several aliphatic alcohols. M. SAMIR AMER* AND MARTIN P. SCHULMAN. *Univ. of Illinois.*

9:15 **2020.** Biosynthesis of uniformly-labeled fatty acids. ROBERT H. COOTS. *Proctor and Gamble Co. and Miami Valley Labs.*

9:30 **2021.** Acetate incorporation into the 2-hydroxy fatty acids of the rat brain. ARMAND J. FULCO* AND JAMES F. MEAD. *UCLA.*

9:45 **2022.** Reductive biosynthesis of fatty acids. A. F. D'ADAMO, JR.,* H. D. HOBERMAN AND D. HAFT.* *Albert Einstein Coll. of Med.*

10:00 **2023.** Metabolism of intracellularly generated reduced di- and triphosphopyridine nucleotides-4-H^3. DANIEL W. FOSTER* AND BEN BLOOM. *Natl. Insts. of Health.*

10:15 **2024.** Relative incorporation of palmitate-C^{14} into triglycerides and phospholipids. RALPH M. JOHNSON, LILY KERUR* AND GEETA KAPADIA.* *Ohio State Univ.*

10:30 **2025.** Fatty acids of human brain and spleen cerebrosides. N. S. RADIN AND Y. AKAHORI.* *Univ. of Michigan.*

10:45 **2026.** Polyunsaturated fatty acids in young and adult, normal and X-irradiated rats. JOHN G. CONIGLIO, F. BARTOW CULP* AND JAMES DAVIS.* *Vanderbilt Med. Sch.*

11:00 **2027.** Enzymatic omega oxidation of fatty acids. KENNETH C. ROBBINS. *Michael Reese Res. Fndn. and Armour and Co.*

11:15 **2028.** Fatty acid metabolism in Clostridium butyricum. HOWARD GOLDFINE.* *Harvard Univ.*

195. Nitrogen Fixation; Trace Elements

THURS. A.M.—CONVENTION HALL, ROOM F

Chairman: V. Najjar

9:00 **2029.** Distribution of potassium in kidney slices. ERNEST C. FOULKES. *May Inst., Jewish Hosp. and Univ. of Cincinnati.*

9:15 **2030.** Incorporation of labeled manganese into duck erythrocytes. J. RAYMOND KLEIN AND G. E. NORRIS.* *Brookhaven Natl. Lab. and Denison Univ.*

9:30 **2031.** Incorporation of radioselenite by baker's yeast. TRYGVE TUVE* AND KLAUS SCHWARZ. *Natl. Insts. of Health.*

9:45 **2032.** Binding of ionic and chelated rare earths with serum proteins and nucleic acids. M. ROQUE,* B. ROSOFF,* H. HART* AND G. WILLIAMS.* *Montefiore Hosp.*

10:00 **2033.** Goiter in animals. ISIDOR GREENWALD. *New York Univ.*

10:15 **2034.** Reactions of cell-free preparations of Nitrosomonas europaea. C. C. DELWICHE, W. D. BURGE* AND E. MALAVOLTA.* *Univ. of California.*

10:30 **2035.** Properties of the nitrogen-fixing enzyme system from Clostridium pasteurianum. JOHN MCNARY,* K. C. SCHNEIDER* AND R. H. BURRIS. *Univ. of Wisconsin.*

10:45 **2036.** A TPNH-specific nitrite reductase from Escherichia coli. ROBERT A. LAZZARINI* AND DANIEL E. ATKINSON. *UCLA.*

11:00 **2037.** Components of the nitrogen fixation enzyme system in Clostridium pasteurianum. LEONARD E. MORTENSON.* *E. I. duPont.*

11:15 **2038.** Carbon monoxide inhibition of enzymatic N_2-fixation. HOWARD F. MOWER.* *E. I. duPont.*

196. Amino Acid Metabolism III

THURS. A.M.—CONVENTION HALL, ROOM G

Chairman: D. Shemin

9:00 **2039.** Influence of dietary phenylalanine and tryptophan on tissue serotonin. HWA L. WANG,* V. R. HARWALKER* AND HARRY A. WAISMAN. *Univ. of Wisconsin.*

9:15 **2040.** Proline oxidation to Δ^1-pyrroline-5-carboxylic acid in rat liver mitochondria. ANNE B. JOHNSON* AND HAROLD J. STRECKER. *Albert Einstein Coll.*

9:30 **2041.** Solubilization of the mitochondrial monoiodotyrosine-producing enzyme system of thyroid tissue. PHILIP WITONSKY* AND SAM KIRKWOOD. *Univ. of Minnesota.*

9:45 **2042.** Thyroid DPNH oxidase activity and tyrosine iodination. S. J. KLEBANOFF AND C. YIP. *Rockefeller Inst.*

10:00 **2043.** Metabolism of 3,3′ diiodothyronine. EUNICE V. FLOCK, JESSE L. BOLLMAN* AND GEORGE H. C. STOBIE.* *Mayo Clinic and Mayo Fndn.*

10:15 **2044.** Inhibition of p-hydroxyphenylpyruvic acid oxidase by excess substrate or phenylpyruvic acid. VINCENT G. ZANNONI* AND BERT N. LA DU. *Natl. Inst. of Arthritis and Metabol. Dis.*

10:30 **2045.** Conversion of L-phenylalanine to cinnamic acid by phenylalanase, an enzyme from barley. JANE KOUKOL* AND ERIC E. CONN. *Univ. of California.*

10:45 **2046.** Enzymatic synthesis of ornithuric acid. F. L. MARSHALL* AND O. J. KOEPPE.* *Univ. of Missouri.*

197. Coenzyme Metabolism II

THURS. A.M.—AMBASSADOR, RENAISSANCE ROOM

Chairman: N. O. Kaplan

9:00 **2047.** Purification and properties of flavokinase from rat liver. DONALD B. MCCORMICK. *Cornell Univ.*

9:15 **2048.** Thiamine biosynthesis: mechanism of formation of 2-methyl-4-amino-5 (hydroxymethyl) pyrimidine pyrophosphate. LAWRENCE M. LEWIN* AND GENE M. BROWN. *MIT.*

9:30 **2049.** Incorporation of nicotinic acid into pyridine nucleotides of erythrocytes and reticulocytes of rabbits in vitro. ERNST R. JAFFE* AND EDWIN E. GORDON.* *Albert Einstein Coll. of Med.*

9:45 **2050.** In vivo labeling of mitochondrial pyridine nucleotides in rat liver by nicotinic 7-C^{14} acid. J. L. PURVIS.* *Brandeis Univ.*

10:00 **2051.** Diphosphopyridine nucleotide biosynthesis by Escherichia coli. JOHN IMSANDE.* *Univ. of California.*

10:15 **2052.** A new intermediate in trigonelline metabolism. J. G. JOSHI* AND PHILIP HANDLER. *Duke Univ.*

10:30 **2053.** Preparation and properties of some DPN analogues. COLVIN P. FAWCETT.* *Brandeis Univ.*

10:45 **2054.** Inhibition of N-methylation by 6-mercaptopurine. EDWARD BRESNICK* AND GEORGE H. HITCHINGS. *Wellcome Res. Labs.*

11:00 **2055.** In vitro biosynthesis of coenzyme Q. PHILIP H. GOLD,* G. HOSSEIN DIALAMEH* AND ROBERT E. OLSON. *Univ. of Pittsburgh.*

11:15 **2056.** Synthesis and metabolism of vitamin K_1-3′-methyl-^{14}C. WILLIAM R. MICHAEL* AND WILLIAM H. ELLIOTT. *St. Louis Univ. Sch. of Med.*

11:30 **2057.** Transport and excretion of menadione. D. G. CORNWELL* AND K. E. GUYER.* *Ohio State Univ.*

198. Protein Chemistry IV

THURS. A.M.—AMBASSADOR, VENETIAN ROOM

Chairman: S. Moore

9:00 **2058.** Effect of iodination on protein fluorescence. MICHAEL CAPLOW.* *Brandeis Univ.*

9:15 **2059.** Isolation, purification and amino acid composition of a human urinary ribonuclease. ROBERT DELANEY* AND RAY K. BROWN. *New York State Dept. of Health.*

9:30 **2060.** Some physico-chemical studies on alpha crystallin isolated from ox lens. SALIL K. NIYOGI* AND VIRGIL L. KOENIG. *Northwestern Univ.*

9:45 **2061.** Structure of α-lactalbumin. THOMAS S. SEIBLES* AND LEOPOLD WEIL. *Eastern Regional Res. Lab., U.S. Dept. of Agriculture.*

10:00 **2062.** Carboxyl terminal amino acids of β-lactoglobulins A and B. EDWIN B. KALAN* AND RAE GREENBERG.* *Eastern Regional Res. Lab., U.S. Dept. of Agriculture.*

10:15 **2063.** Comparison of two genetically different β-lacto-

globulins. K. A. PIEZ, E. DAVIE, J. E. FOLK AND J. A. GLADNER. *Natl. Insts. of Health and Western Reserve Univ.*

10:30 **2064.** Thiazolines and protein structure. LUDWIG SALCE* AND IRVING GOODMAN. *Columbia Univ.*

10:45 **2065.** Location of tryptophyl groups in globular proteins. MICHAEL LASKOWSKI, JR. AND THEODORE T. HERSKOVITS.* *Purdue Univ.*

11:00 **2066.** Physical properties of dogfish shark skin collagen. MARC S. LEWIS* AND KARL A. PIEZ. *Natl. Insts. of Health.*

11:15 **2067.** Isolation of an unidentified amino acid from collagen. JAMES D. OGLE,* MILAN A. LOGAN AND RALPH B. ARLINGHAUS.* *Univ. of Cincinnati.*

11:30 **2068.** Nature of nondialyzable peptides found after digestion of ichthyocol with collagenase. C. FRANZBLAU,* S. SEIFTER AND P. M. GALLOP. *Albert Einstein Coll. of Med.*

11:45 **2069.** Effects of electron beam irradiation on collagen. ELOISE KUNTZ* AND ESTHER WHITE.* *Ethicon, Inc.*

199. Carbohydrate Metabolism VI

THURS. A.M.—AMBASSADOR, SURF ROOM

Chairman: M. Karnovsky

9:00 **2070.** Control of carbohydrate metabolism during phagocytosis. M. L. KARNOVSKY, W. EVANS* AND R. REIBSTEIN.* *Harvard Univ.*

9:15 **2071.** Citric acid metabolism in cardiac mitochondria. MENARD M. GERTLER.* *New York Univ.*

9:30 **2072.** Regulation of glucose oxidation by coenzymes. Role of ATP and IMP. GIUSEPPE INESI,* ELLA HAUGAARD* AND NIELS HAUGAARD. *Univ. of Pennsylvania.*

9:45 **2073.** A possible function of 2,3-diphosphoglycerate in the erythrocyte. JOHN M. FOSTER,* LEONARD S. BUSHNELL* AND FABIAN J. LIONETTI. *Boston Univ.*

10:00 **2074.** α-Glycerophosphate cycle in hamster liver: properties of enzymes involved. EDWARD I. CIACCIO* AND DORIS L. KELLER.* *Merck Inst.*

10:15 **2075.** Effect of bilateral adrenalectomy on the oxidation of alpha glycerophosphate (AGP) by rat liver mitochondria. K. S. HENLEY,* H. KAWATA,* H. M. POLLARD,* E. OLSON* AND E. RIEHL.* *Univ. of Michigan.*

10:30 **2076.** Pasteur effect reversal in rat brain mitochondria. GEORGE RENDINA* AND L. HELLERMAN. *Johns Hopkins Sch. of Med.*

10:45 **2077.** Pyruvate metabolism in rat brain. ROGER E. KOEPPE AND CHAE HEE HAHN.* *Oklahoma State Univ.*

11:00 **2078.** Action of fluoroacetate and fluorocitrate. EDWIN E. GORDON.* *Albert Einstein Coll. of Med. and Bronx Municipal Hosp.*

11:15 **2079.** Respiration of ripening cantaloupe fruit and phosphate acceptor level. K. S. ROWAN,* W. B. MC GLASSON* AND H. K. PRATT.* *Univ. of California.*

11:30 **2080.** Inhibition of respiration, cell growth, and cell division in Tetrahymena pyriformis G. L. by phenylurethane and low partial pressures of oxygen. N. V. BHAGAVAN* AND J. J. EILER. *Univ. of California.*

11:45 **2081.** Effects of experimental injury on carbohydrate metabolism in silkmoth pupae. G. R. WYATT. *Yale Univ.*

Biochemistry Society Sessions—Thursday, 1:30 p.m.

200. Nucleic Acid Chemistry II

THURS. P.M.—CONVENTION HALL, BALLROOM

Chairman: P. Doty

1:30 **2082.** Isolation and properties of DNA from mammalian sperm. ELLEN BORENFREUND* AND AARON BENDICH. *Sloan-Kettering Inst.*

1:45 **2083.** Isolation and characterization of Drosophila DNA. C. G. MEAD* AND A. S. FOX.* *Michigan State Univ.*

2:00 **2084.** Some effects of pancreatic deoxyribonuclease action on the spectrum of calf thymus deoxyribonucleate. LEW CUNNINGHAM. *Marquette Univ. Sch. of Med.*

2:15 **2085.** Reaction of nitrogen mustard (HN_2) with DNA. R. J. RUTMAN, J. JONES,* W. J. STEELE* AND C. C. PRICE.* *Univ. of Pennsylvania.*

2:30 **2086.** Reaction of hydroxylamine with DNA components. EKKEHARD BAUTZ* AND ERNEST FREESE.* *Univ. of Wisconsin.*

2:45 **2087.** Factors controlling the reversibility of DNA denaturation. E. P. GEIDUSCHEK. *Univ. of Chicago.*

3:00 **2088.** Denaturation of chicken erythrocyte DNA by formaldehyde, glycol and glycerol. Renaturation by dilution. EDWARD L. DUGGAN AND STUART L. BUNCH.* *Univ. of California Sch. of Med.*

3:15 **2089.** Density gradient centrifugation of DNA from normal mouse tissues and tumors. SAUL KIT. *Univ. of Texas M.D. Anderson Hosp. and Tumor Inst.*

3:30 **2090.** Hybrid molecules, containing strands of dAT and dABrU, formed both by enzymatic and physico-chemical means. R. L. BALDWIN, R. B. INMAN* AND R. G. WAKE.* *Stanford Univ.*

3:45 **2091.** Four-stranded DNA as determined by X-irradiation. L. F. CAVALIERI, R. FINSTON* AND B. H. ROSENBERG.* *Sloan-Kettering Inst.*

4:00 **2092.** Optical rotatory dispersion and spectral properties of nucleic acids. P. Ts'o, G. HELMKAMP* AND C. SANDER.* *California Inst. of Technology and Univ. of California, Riverside.*

4:15 **2093.** Possible occurrence in vivo and in vitro of DNA-RNA complexes. NIRMAL K. SARKAR.* *Univ. of Rochester Sch. of Med. and Dent.*

201. Carbohydrate Metabolism VII

THURS. P.M.—CONVENTION HALL, ROOM H

Chairman: D. Stetten

1:30 **2094.** Glucose metabolism using a single isolated rat diaphragm. R. RICHARD GRAY* AND JOSEPH H. ROE. *George Washington Univ. Sch. of Med.*

1:45 **2095.** Control of glucose uptake. W. K. BAKER.* *Univ. of Illinois.*

2:00 **2096.** Insulin stimulated incorporation of tryptophan into cell free muscle homogenate. SAMUEL P. BESSMAN AND PAUL DE SCHEPPER. *Univ. of Maryland Sch. of Med.*

2:15 **2097.** Regulation of hexokinase activity in muscle; effects of diabetes and anoxia on hexose phosphate levels. D. M. REGEN,* W. W. DAVIS* AND H. E. MORGAN.* *Vanderbilt Univ. Sch. of Med.*

2:30 **2098.** A direct effect of insulin on liver. M. E. KRAHL AND J. C. PENHOS.* *Univ. of Chicago.*

2:45 **2099.** Epinephrine-induced lipolysis in fat tissue inhibited by ribonucleic acid. V. P. DOLE. *Rockefeller Inst.*

3:00 **2100.** Effects of starvation on metabolism and enzyme contents of adipose tissue. W. S. LYNN, JR., ROSE BROWN* AND EUGENIA EARNDARDT.* *Duke Univ. Med. Ctr.*

3:15 **2101.** Direct actions of insulin and glucagon on the isolated perfused rat liver. LEON L. MILLER. *Univ. of Rochester Sch. of Med. and Dent.*

3:30 **2102.** Liver phosphorylase activation by factor(s) in plasma. MAYNARD H. MAKMAN* AND EARL W. SUTHERLAND. *Western Reserve Univ. Sch. of Med.*

3:45 **2103.** Effects of glucagon and insulin on carbohydrate metabolism in a lizard. ANTHONY DI MAGGIO III. *Louisiana State Univ. Sch. of Med.*

202. Enzymes IV

THURS. P.M.—CONVENTION HALL, STAGE

Chairman: G. S. Schwert

1:30 **2104.** Kinetics of threonine dehydrase action. L. DAVIS.* *Iowa State Univ.*

1:45 **2105.** Prevalence and significance of the product inhibition of enzymes. C. F. WALTER* AND EARL FRIEDEN. *Florida State Univ.*

2:00 **2106.** Inhibitor studies on serine-pyruvate transaminase. KENNETH C. LEIBMAN.* *Univ. of Florida Coll. of Med.*

2:15 **2107.** 4-Hydroxycinnamic decarboxylase: the metabolic formation of hydroxystyrenes. BERNARD J. FINKLE* AND ROBERT E. LUNDIN.* *Western Regional Res. Lab.*

2:30 **2108.** Ribitol dehydrogenase. HERBERT J. FROMM AND DENNIS R. NELSON.* *Univ. of North Dakota Sch. of Med.*

2:45 **2109.** Ionic strength effects on kinetics of α-chymotrypsin catalyzed hydrolysis of hippuric acid esters. JAMES L. MILES,* DIANA A. ROBINSON* AND WILLIAM J. CANADY.* *West Virginia Univ. Med. Ctr.*

3:00 **2110.** Molecular weight and enzyme-substrate dissociation constants of phosphoglycerate kinase. PETER OESPER. *Hahnemann Med. Coll.*

3:15 **2111.** ATP-creatine transphosphorylase. Effects of Mg^{++}, anions and pH on the reverse reaction. TAIICHI NIHEI* AND LAFAYETTE NODA. *Dartmouth Med. Sch.*

3:30 **2112.** Phosphorylated site in human muscle phosphorylase *a*. R. C. HUGHES,* A. A. YUNIS,* E. H. FISCHER AND E. G. KREBS. *Univ. of Washington.*

3:45 **2113.** Active site of muscle and yeast phosphoglucomutase. SIDNEY HARSHMAN* AND VICTOR A. NAJJAR. *Vanderbilt Univ. Sch. of Med.*

4:00 **2114.** Structural aspects of acetylcholinesterase. H. CLAIRE LAWLER.* *Columbia Univ.*

203. Protein Metabolism IV

THURS. P.M.—CONVENTION HALL, ROOM F

Chairman: R. S. Schweet

1:30 **2115.** Specific activities of nuclear proteins and nucleic acids in regenerating liver. JOHN H. EVANS,* DAVID J. HOLBROOK, JR.* AND J. LOGAN IRVIN. *Univ. of North Carolina Sch. of Med.*

1:45 **2116.** Failure of hemoglobin to incorporate L-valyl-L-leucine. J. PAUL BURNETT* AND F. HAUROWITZ. *Indiana Univ.*

2:00 **2117.** In vitro synthesis of protein and nucleic acids by ascites tumor cells. E. R. M. KAY. *Univ. of Rochester Sch. of Med. and Dent.*

2:15 **2118.** Puromycin inhibition of protein synthesis by Ehrlich ascites tumor cells. M. RABINOVITZ AND J. M. FISHER. *Natl. Cancer Inst.*

2:30 **2119.** Formation of egg white proteins. STANLEY MANDELES* AND E. D. DUCAY.* *Western Regional Res. Lab.*

2:45 **2120.** Serum albumin catabolism. HENRY JEFFAY,* JOSE C. GAN* AND MARSHALL MATZ.* *Univ. of Illinois Coll. of Med.*

3:00 **2121.** In vivo studies on the synthesis of rabbit serum albumin. MELVIN FRIED* AND KENNETH E. NEET.* *Univ. of Florida Coll. of Med.*

3:15 **2122.** Intracellular events in serum albumin formation by rat liver in vivo. THEODORE PETERS, JR. *Mary Imogene Bassett Hosp.*

3:30 **2123.** In vitro synthesis of collagen by the uterus of rat. K.-Y. T. KAO* AND T. H. MCGAVACK.* *VA Ctr., Martinsburg, West Virginia and George Washington Univ. Sch. of Med.*

3:45 **2124.** Synthesis of invertase in S. cerevisiae. F. DODYK.* *Univ. of Rochester Sch. of Med.*

204. Amino Acid Metabolism IV

THURS. P.M.—CONVENTION HALL, ROOM G

Chairman: W. E. Knox

9:00 **2125.** Metabolism of DL-tryptophan-5-C^{14}. G. P. MATHUR* AND L. M. HENDERSON. *Oklahoma State Univ.*

9:15 **2126.** N-(5′-phosphoribosyl) anthranilic acid, an intermediate in tryptophan biosynthesis. COLIN H. DOY,* P. R. SRINIVASAN AND AMERICO RIVERA.* *Harvard and Columbia Med. Schs.*

9:30 **2127.** Control of tryptophan biosynthesis in Escherichia coli. MARTIN FREUNDLICH* AND HERMAN C. LICHSTEIN. *Univ. of Minnesota.*

9:45 **2128.** Mechanism of feedback inhibition in histidine biosynthesis. ROBERT G. MARTIN,* BRUCE N. AMES AND BARBARA J. GARRY.* *Natl. Inst. of Arthritis and Metabolic Dis.*

10:00 **2129.** Enzymatic racemization of tryptophan. E. J. BEHRMAN* AND ANDREA M. CULLEN.* *New England Deaconess Hosp.*

10:15 **2130.** Enzymatic degradation of kynurenic acid. S. KUNO,* M. TASHIRO,* H. TANIUCHI,* K. HORIBATA,* O. HAYAISHI, S. SENO,* T. TOKUYAMA* AND T. SAKAN.* *Kyoto Univ. and Isaka City Univ.*

10:30 **2131.** Comparison of mechanisms of substrate and hormonal induction of rat liver tryptophan pyrrolase. P. FEIGELSON. *Columbia Univ.*

10:45 **2132.** Enzymatic steps in tryptophan pyrrolase activation. H. C. PITOT* AND Y. S. CHO.* *Univ. of Wisconsin.*

11:00 **2133.** Relationships between inhibitor, activator, and substrate of rat liver tryptophan pyrrolase. OLGA GREENGARD.* *Columbia Univ.*

205. Glycoproteins

THURS. P.M.—AMBASSADOR, RENAISSANCE ROOM

Chairman: E. L. Smith

1:30 **2134.** Pneumococcal neuraminidase action on human RBC. E. H. EYLAR,* O. V. BRODY* AND J. L. ONCLEY. *Harvard Med. Sch.*

1:45 **2135.** Contribution of sialic acid to RBC mobility. M. A. MADOFF* AND E. H. EYLAR.* *New England Ctr. Hosp. and Harvard Med. Sch.*

2:00 **2136.** Carbohydrate-containing proteins of bovine platelet walls. A. BEZKOROVAINY* AND D. G. DOHERTY. *Oak Ridge Natl. Lab.*

2:15 **2137.** Carbohydrate of the α_1-glycoprotein. EDWIN A. POPENOE, FLORENCE L. KEE* AND RUTH M. DREW.* *Brookhaven Natl. Lab.*

2:30 **2138.** Polymorphism of α_1-acid glycoprotein. K. SCHMID AND J. P. BINETTE.* *Massachusetts Gen. Hosp. and Harvard Med. Sch.*

2:45 **2139.** Purification and properties of "transcortin," the corticosteroid-binding globulin. U. S. SEAL* AND R. P. DOE.* *VA Hosp. and Univ. of Minnesota.*

3:00 **2140.** Glycopeptides from rabbit γ-globulin. CHRIS NOLAN* AND EMIL L. SMITH. *Univ. of Utah Coll. of Med.*

3:15 **2141.** Attachment of carbohydrate to protein in human γ-globulin. JOHN A. ROTHFUS.* *Univ. of Utah Coll. of Med.*

3:30 **2142.** Isolation and characterization of glycopeptides from fetuin. ROBERT G. SPIRO. *Massachusetts Gen. Hosp. and Harvard Med. Sch.*

3:45 **2143.** Glycoproteins of nerve tissue. E. ROBOZ-EINSTEIN, N. ELDREDGE* AND M. HERMAN.* *Univ. of California Sch. of Med. and Stanford Univ.*

4:00 **2144.** Reciprocity between fucose and sialic acid in glycoprotein fractions of male urine. C. ROTHSCHILD,* H. KAWASAKI,* A. DANILCHENKO* AND Z. DISCHE. *Coll. of Physicians and Surgeons, Columbia Univ.*

4:15 **2145.** A molecular abnormality of urinary mucoprotein in cystic fibrosis of the pancreas. WILLIAM WOLINS* AND MYLES MAXFIELD. *Brookhaven Natl. Lab.*

206. Lipid Chemistry

THURS. P.M.—AMBASSADOR, VENETIAN ROOM

Chairman: H. E. Carter

1:30 **2146.** Nature of aldehydogenic units of human RBC plasmalogens. J. W. FARQUHAR* AND K. OETTE.* *Rockefeller Inst.*

1:45 **2147.** Human cardiac age pigment. D. D. HENDLEY,* B. L. STREHLER, M. C. REPORTER* AND M. V. GEE.* *Natl. Insts. of Health and Baltimore City Hosps.*

2:00 **2148.** Pigmentation of elastin. F. MAROTT SINEX AND BARBARA FARIS.* *Boston Univ. Sch. of Med.*

2:15 **2149.** Composition of liver glycolipids J. M. MCKIBBIN. *State Univ. of New York.*

2:30 **2150.** Lipide portion of gangliosides. JOEL A. DAIN,* GERHARD SCHMIDT AND S. J. THANNHAUSER. *Tufts Univ. Sch. of Med.*

2:45 **2151.** Paper chromatography of phosphoinositides. M. H. HACK. *Tulane Univ.*

3:00 **2152.** Isolation of phosphatidal choline, a pure native plasmalogen. EUGENE L. GOTTFRIED* AND MAURICE M. RAPPORT. *Albert Einstein Coll. of Med.*

3:15 **2153.** Effects of varying the chemical composition of the stationary phase on the separation of certain C_{19}, C_{21} and C_{27} steroids by gas chromatography. S. R. LIPSKY AND R. A. LANDOWNE.* *Yale Univ.*

3:30 **2154.** Analysis of tissue lipids by TLC and GLC. H. K. MANGOLD* AND N. TUNA.* *Univ. of Minnesota.*

3:45 **2155.** Lipid class separation by liquid-gel chromatography. JULES HIRSCH. *Rockefeller Inst.*

4:00 **2156.** Gas-chromatographic estimation of estrogens in pregnancy urines. HERBERT H. WOTIZ AND HORACE F. MARTIN.* *Boston Univ. Sch. of Med.*

207. Oxidative Enzymes IV

THURS. P.M.—AMBASSADOR, SURF ROOM

Chairman: A. Mehler

1:30 **2157.** Triplet state and biological photosensitization by furocoumarins (psoralens). M. A. PATHAK.* *Harvard Med. Sch. and Keele, England.*

1:45 **2158.** Requirements for luminescence in a balanoglossid worm. LEON S. DURE* AND MILTON J. CORMIER.* *Univ. of Georgia.*

2:00 **2159.** Hog intestine diamine oxidase. YUTAKA KOBAYASHI AND TSUNEO OKUYAMA.* *Worcester Fndn. for Exper. Biol.*

2:15 **2160.** Effect of oxygen tension on monoamine oxidase (MAO). WILLIAM J. NOVICK.* *Duke Univ. Med. Ctr.*

2:30 **2161.** Characterization of two homologous monoamine oxidases. S. SARKAR* AND E. A. ZELLER. *Northwestern Univ. Med. Sch.*

2:45 **2162.** Metabolism of L- and D-thyroxine by L-amino acid oxidase. ADALINE N. MATHER.* AND SHIRLEY K. CARROLL.* *Baxter Labs.*

3:00 **2163.** L-Amino acid oxidase with phenazine methosulfate and pyocyanine. ABRAHAM MARCUS AND JOHN FEELEY.* *U.S. Dept. of Agriculture.*

3:15 **2164.** Enzymatic lactonization of terpenoids. H. E. CONRAD,* E. J. COREY,* I. C. GUNSALUS AND RUDOLPH HARTMANN.* *Univ. of Illinois and Harvard Univ.*

3:30 **2165.** L-Gulonolactone oxidase inactivation in tocopherol deficiency. M. P. CARPENTER,* P. B. MCCAY,* A. E. KITABCHI,* R. E. TRUCCO AND R. CAPUTTO. *Oklahoma Med. Res. Inst.*

Biochemistry Society Business Meeting

THURSDAY, 4:30 P.M.—CONVENTION HALL, ROOM H

Pharmacology Society Sessions—Thursday, 9:00 a.m.

208. Autonomic Pharmacology II

THURS. A.M.—DENNIS, BORTON HALL

Chairman: G. B. Koelle

9:00 **2166.** Vagal body: receptor site for emetic action of veratrum alkaloids? H. L. BORISON AND S. R. SAMPSON.* *Univ. of Utah.*

9:15 **2167.** In vivo and in vitro anticholinesterase effect of phospholine iodide in man. V. M. FOLDES,* F. F. FOLDES AND E. K. ZSIGMOND.* *Mercy Hosp. and Univ. of Pittsburgh.*

9:30 **2168.** Asynchronous postganglionic discharge from DFP-treated resting sympathetic ganglia. R. L. VOLLE.* *Univ. of Pennsylvania.*

9:45 **2169.** Synthesis and pharmacological evaluation of some aliphatic hemicholinium analogues. MARVIN F. POWERS,* STEFAN KRUGER* AND FRED W. SCHUELER. *Tulane Univ.*

10:00 **2170.** Autonomic blocking properties of HC-3. K. C. WONG* AND J. P. LONG. *State Univ. of Iowa.*

10:15 **2171.** Stimulant effect of TEA on acetylcholine output from the superior cervical ganglion: comparison with barium. W. W. DOUGLAS AND D. W. LYWOOD.* *Albert Einstein Coll. of Med.*

10:30 **2172.** Influence of several sympathomimetic amines on synaptic transmission in the superior cervical ganglion. EFRAÍN G. PARDO, JORGE CATO,* ENRIQUE GIJON* AND FRANCISCO ALONSO DEFLORIDA.* *Univ. Nacional Autonoma de Mexico.*

10:45 **2173.** Evidence that norepinephrine in sympathetic ganglia modulates sympathetic synaptic transmission. E. COSTA, A. M. REVZIN,* R. KUNTZMAN,* S. SPECTOR AND B. B. BRODIE. *Natl. Insts. of Health.*

11:00 **2174.** Mode of action of ganglion-blocking substances. U. TRENDELENBURG. *Harvard Med. Sch.*

11:15 **2175.** Pressor activity of unsaturated acid esters of choline. A. A. SEKUL* AND W. C. HOLLAND. *Univ. of Mississippi.*

11:30 **2176.** Pharmacological properties of the methane sulfonyl ester of choline. EILEEN T. ECKHARDT* AND FRED W. SCHUELER. *Tulane Univ.*

11:45 **2177.** Influence of chemical structure on the enzymatic hydrolysis of γ-aminobutyrylcholine derivatives. F. F. FOLDES AND V. M. FOLDES.* *Mercy Hosp. and Univ. of Pittsburgh.*

209. Renal Pharmacology II

THURS. A.M.—DENNIS, CRYSTAL BALLROOM

Chairman: A. E. Farah

9:00 **2178.** Femoral and renal blood flow and resistance changes. JOHN C. MCGIFF* AND DOMINGO M. AVIADO. *Univ. of Pennsylvania.*

9:15 **2179.** Effect of cigarette smoking on the excretion of phenol red. R. R. LEVINE, E. W. PELIKAN AND C. J. KENSLER. *Boston Univ.*

9:30 **2180.** Renal excretion patterns of malic acid in the dog. P. VISHWAKARMA.* *Queen's Univ.*

9:45 **2181.** Effect of 2-amino-2-hydroxymethyl-1,3-propanediol (THAM) on glycosuria induced by pancreatectomy or phlorizin. J. STRAUSS* AND G. G. NAHAS.* *Columbia Univ.*

10:00 **2182.** Renal tubular transport and molecular structure of some acetamidobenzoic acids. P. K. KNOEFEL, K. C. HUANG AND C. H. JARBOE.* *Univ. of Louisville.*

10:15 **2183.** Changes in the cytoplasmic content of protein-bound sulfhydryl and disulfide in rat kidney cells caused by hydration, dehydration and Pitressin. GILBERTO MOLINA,* R. KRUSE* AND A. FARAH. *State Univ. of New York at Syracuse.*

10:30 **2184.** Release of p-aminohippurate from renal slices. A. FARAH AND M. FRAZER.* *State Univ. of New York at Syracuse.*

10:45 **2185.** Effect of cholinergic agents on urinary excretion of sodium and potassium in rats. M. KATHLEEN CARTER AND SCHALES L. ATKINSON.* *Tulane Univ.*

11:00 **2186.** Mechanism of the blocking of mercurial diuresis by p-chloromercuribenzoate. T. B. MILLER* AND A. FARAH. *State Univ. of New York at Syracuse.*

11:15 **2187.** Advances in nonmercurial diuretics. HARRY GOLD, DILIP J. MEHTA,* NATHANIEL T. KWIT, ARGYRIOS GOLFINOS,* MILTON L. KRAMER* AND CHARLES R. MESSELOFF.* *Cornell Univ., Beth Israel Hosp. and Lincoln Hosp.*

11:30 **2188.** Renal clearance studies on amprolium, a new coccidiostat, in dogs. J. E. BAER, H. F. RUSSO* AND K. H. BEYER. *Merck Inst. for Therap. Res.*

11:45 **2189.** Newer therapeutic procedures in resistant ascites of liver cirrhosis. F. STEIGMANN, S. ALVAREZ,* T TRIANTAFILLIDES* AND A. DUBIN.* *Cook County Hosp.*

12:00 **2190.** Effects of thyroidectomy and thyroxine on the renal uptake of PAH and TEA. C. NEPOMUCENO* AND J. MAXWELL LITTLE. *Wake Forest Coll.*

210. Radiation

THURS. A.M.—DENNIS, ST. DENIS ROOM

Chairman: M. Lubin

9:00 **2191.** Radioprotective effect of serotonin in mice. J. DOULL AND B. J. TRICOU.* *Univ. of Chicago.*

9:15 **2192.** Radioprotective effects of dithiooxamide derivatives in mice. V. J. PLZAK* AND J. DOULL. *Univ. of Chicago.*

9:30 **2193.** Effect of 2-aminoethylisothiouronium (AET) bromide hydrobromide on the incorporation of thymidine-H^3 into DNA. JIŘÍ FIALA.* *George Washington Univ.*

9:45 **2194.** Effect of mercaptoethylguanidine or its disulfides on $P^{32}O_4$ incorporation into cultured cells following x-irradiation. KENNETH W. FLOYD,* R. W. WHITEHEAD AND DAVID M. GOULD.* *Univ. of Colorado.*

10:00 **2195.** Reduction of radiation mortality of guinea pigs by postirradiation treatment with cell-free dog spleen extract. F. ELLINGER, S. KATZ,* T. A. STRIKE* AND B. F. LINDSLEY.* *Naval Med. Res. Inst.*

10:15 **2196.** X-Irradiation and intestinal ganglia. THOMAS J. HALEY, N. KOMESU* AND A. M. FLESHER.* *UCLA*

10:30 **2197.** Electron microscopic changes in radiated rat intestine. L. E. DETRICK, H. C. UPHAM* AND H. LATTA.* *UCLA.*

10:45 **2198.** Threshold and pattern of electroshock convulsions after x-irradiation in the rat. FRED ROSENTHAL* AND PAOLA S. TIMIRAS. *Univ. of California.*

211. Chemotherapy

THURS. A.M.—DENNIS, GARDEN LOUNGE

Chairman: W. Modell

9:00 **2199.** Antimalarial activities of biguanides and their triazine metabolites. CARL C. SMITH AND R. FRADKIN.* *Christ Hosp. Inst. of Med. Res.*

9:15 **2200.** Metabolism of C^{14}-labeled aminouracil mustard in tumor-bearing rats. PAUL BYVOET,* DON A. GARD,* HELEN R. ADAMS* AND HARRIS BUSCH. *Baylor Univ.*

9:30 **2201.** Radioisotopic-microbiological technique to quantitate selected antibiotics. R. L. DAVIS,* S. B. MACINTYRE* AND A. H. LAWTON. *VA Ctr., Bay Pines, Florida.*

9:45 **2202.** Effect of cortisone on the action of endotoxin in cultures of spleen from normal rabbits. DOROTHY H. HEILMAN.* *Mt. Alto VA Hosp., Washington, D.C.*

10:00 **2203.** Stabilization of protoplasts by spermine. C. W. TABOR. *Natl. Insts. of Health.*

10:15 **2204.** Drug sensitivity variations in T. equiperdum following exposure to mutagenic agents. N. ERCOLI. *Inst. Venezolano de Investigaciones Cientificas.*

10:30 **2205.** Low temperature activation of a growth factor. F. W. SAYRE,* E. L. HANSEN AND E. A. YARWOOD.* *Kaiser Fndn. Research Inst.*

10:45 **2206.** Isolated outbreak of Asian influenza in a large closed population. J. W. FRANKEL,* C. W. COLEMAN* AND W. P. BOGER. *Norristown State Hosp.*

11:00 **2207.** Therapeutic effectiveness of carcinolytic agents and fatigue muscle extracts. BENEDICT B. O'MALLEY,* ROBERT WILLHEIM* AND PAUL FLUSS.* *Fairleigh Dickinson Univ. and Inst. of Applied Biol.*

11:15 **2208.** Uptake of C^{14} streptomycin by sensitive, resistant and dependent strains of chlamydomonas. RUTH SAGER.* *Columbia Univ.* (Physiol.)

11:30 **2209.** Effect of the antibiotic spiramycin on a spectrum of animal tumors. N. BACK, R. R. SHIELDS* AND A. E. MUNSON.* *Roswell Park Mem. Inst. and Univ. of Buffalo.*

11:45 **2210.** Effects of vincaleukoblastine, streptonigrin and eponate on the hematopoietic system of man. H. R. BIERMAN AND G. J. MARSHALL.* *Inst. for Cancer and Blood Res.*

Pharmacology Society Sessions—Thursday, 1:30 p.m.

212. Autonomic Pharmacology III

THURS. P.M —DENNIS, BORTON HALL

Chairman: C. V. Winder

1:30 **2211.** Cardiovascular actions of retama. JAMES G. HILTON AND MICHAEL J. DUNN.* *Marquette Univ.*

1:45 **2212.** Chronic vagotomy and heart rate control. D. C. JERRAM* AND R. P. AHLQUIST. *Med. Coll. of Georgia.*

2:00 **2213.** Inhibition of adrenal medullary epinephrine output during infusion of epinephrine or norepinephrine. ROBERT L. ROBINSON* AND DANIEL T. WATTS. *West Virginia Univ.*

2:15 **2214.** Release of catecholamines (CA) by nicotine and tyramine. N. WEINER, W. R. BURACK* AND P. R. DRASKOCZY.* *Harvard Med. Sch.*

2:30 **2215.** Effect of several agents on the respiration of and catecholamine (CA) release from fowl adrenal slices. P. R. DRASKOCZY,* W. R. BURACK* AND N. WEINER. *Harvard Med. Sch.*

2:45 **2216.** Acute effects of guanethidine on myocardial contractility and catecholamine levels. J. A. RICHARDSON AND J. L. BUTTERFIELD.* *Med. Coll. of South Carolina.*

3:00 **2217.** Effects of guanethidine, SU-4029, reserpine, cocaine, methylphenidate and tripelennamine on contractions of rabbit aortic strips produced by certain amines. A. I. DANIEL* AND R. A. MAXWELL. *Ciba Pharmaceut. Products.*

3:15 **2218.** Dichloroisoproterenol (DCI) and isoproterenol (ISU) antagonism of norepinephrine (NOR) contractions of rabbit aortic strip. M. WURZEL,* T. PRUSS* AND G. D. MAENGWYN-DAVIES. *Georgetown Univ.*

3:30 **2219.** An explanation for isoproterenol vasomotor reversal. BERNARD LEVY* AND RAYMOND P. AHLQUIST. *Med. Coll. of Georgia.*

3:45 **2220.** Tachyphylaxis of sympathomimetic amines. FREDERICK F. COWAN,* T. KOPPANYI AND G. D. MAENGWYN-DAVIES. *Georgetown Univ.*

213. Toxicology III

THURS. P.M.—DENNIS, ST. DENIS ROOM

Chairman: R. E. Gosselin

1:30 **2221.** Toxicity of Crotalaria spectabilis. WILLIAM D'AGUANNO,* E. M. K. GEILING AND KENT J. DAVIS.* *Food and Drug Admin.*

1:45 **2222.** Surface active films as a model of lung injury by irritant gases. RICHARD M. MENDENHALL* AND HERBERT E. STOKINGER. *USPHS.*

2:00 **2223.** Thyroid in pulmonary injury of acute ozone poisoning. E. J. FAIRCHILD* AND H. E. STOKINGER. *USPHS.*

2:15 **2224.** Effect of CCl_4 on certain aspects of thioridazine metabolism. GABRIEL L. PLAA,* GERRY J. BLACKER* AND EDWIN C. MCGOUGH.* *Tulane Univ.*

2:30 **2225.** Effect of CCl_4 on thiopental sleeping time. ROBERT MEGIRIAN. *Food and Drug Admin.*

2:45 **2226.** CCl_4 hepatotoxicity. DEANE N. CALVERT* AND THEODORE M. BRODY. *Univ. of Michigan.*

3:00 **2227.** Delayed liver injury in dogs treated intravenously with ammoniated ethylene maleic anhydride polymer M.W. 2000–3000 (AEMA 2–3). E. MIHICH, L. SIMPSON ENGLANDER* AND A. I. MULHERN.* *Roswell Park Mem. Inst.*

3:15 **2228.** Ethanol intoxication in adrenocorticosteroid-treated mice. E. B. GOODSELL.* *Univ. of Illinois and Abbott Labs.*

3:30 **2229.** Measure of adrenal defense. E. F. TASKIER* AND E. REVICI.* *Inst. of Applied Biol.* (Immunol.)

3:45 **2230.** Tables for estimating median effective dose. CHRISTIAN BRAUN.* *Miles Labs.*

4:00 **2231.** Effect of glucose pretreatment on the toxicity of sodium tetraborate decahydrate. OTHO D. EASTERDAY. *Brookhaven Natl. Lab.*

214. Histamine—Antihistamine

THURS. P.M.—DENNIS, GARDEN LOUNGE

Chairman: H. Beckman

1:30 **2232.** Mammalian diamine oxidase. V. H. COHN, JR.* AND P. A. SHORE. *Natl. Heart Inst.*

1:45 **2233.** Inhibition of diamine oxidase by bulbocapnine in vitro. J. E. CHAPMAN* AND E. J. WALASZEK. *Univ. of Kansas.*

2:00 **2234.** Histamine formation by fetal rat liver. ALAN BURKHALTER.* *Univ. of California Sch. of Med.*

2:15 **2235.** Uptake and metabolism of amines by mast cells in culture. J. P. GREEN AND S. M. DAY.* *Yale Univ.*

2:30 **2236.** Release of rabbit platelet histamine by thrombin. M. E. TIDBALL* AND P. A. SHORE. *Natl. Heart Inst.*

2:45 **2237.** Quantitative interaction between dextran and antihistamines in the rat. L. KATO AND B. GOZSY. *Univ. of Montreal.* (Physiol.)

3:00 **2238.** Probable mechanism of histamine release by dextran. ANDRES GOTH. *Univ. of Texas Southwestern Med. Sch.*

3:15 **2239.** Measurement of plasma histamine concentration. W. L. THOMPSON.* *Med. Coll. of South Carolina.*

3:30 **2240.** An antitussive property of diphenhydramine. J. WAX,* C. V. WINDER AND G. PETERS.* *Parke, Davis.*

Pharmacology Society Business Meeting

THURSDAY, 4:30 P.M.—DENNIS, BORTON HALL

Exhibits—Inspection Periods

Monday: 8:00 A.M. to 5:00 P.M.
Tuesday through Friday: 8:45 A.M. to 5:00 P.M.

Tickets

Tickets for group breakfasts, luncheons and dinners; Society dinners, Smokers and Mixers; and other Federation functions will be on sale in the registration area, Lobby, Convention Hall.
Hours: Sunday, 12:00 noon to 11:00 P.M.; Monday through Thursday, 8:00 A.M. to 5:00 P.M.

Future Annual Meetings

Federation Annual Meetings for the next three years will be held as follows: 1962, April 16–21, Atlantic City; 1963, April 15–20, Atlantic City; 1964, April 12–18, Chicago.

Pathology Society Sessions—Thursday, 9:00 a.m.

215. Cardiovascular II

THURS. A.M.—RITZ-CARLTON, RITZ HALL

Chairmen: W. B. Wartman; E. T. Nishimura

9:00 **2241.** Deoxyribonucleic and ribonucleic acids in heart "hypertrophy." TOM D. NORMAN AND W. JERRY CARTER.* *Univ. of Arkansas.*

9:15 **2242.** Experimental production of mitral stenosis in rabbits. H. IMAI* AND R. M. O'NEAL. *Washington Univ.*

9:30 **2243.** High interventricular septal infarcts in pig and dog. GEORGE LUMB AND HENRY SINGLETARY.* *James Walker Mem. Hosp.*

9:45 **2244.** Ventricular fibrillation in dogs with temporary occlusions of a coronary artery. R. B. JENNINGS, H. M. SOMMERS,* G. A. SMYTH* AND H. A. FLACK.* *Northwestern Univ.*

10:00 **2245.** Experimental atherosclerosis in the rat. Pathogenesis of the early lesion. W. J. S. STILL* AND ROBERT M. O'NEAL. *Washington Univ.*

10:15 **2246.** Serum lipids and fatty aortic intimal lesions in cebus monkeys. R. W. WISSLER, R. H. HUGHES,* L. E. FRAZIER* AND R. A. RASMUSSEN.* *Univ. of Chicago.*

10:30 **2247.** Liver and aorta lipids of cebus monkeys. L. E. FRAZIER,* R. A. RASMUSSEN,* R. H. HUGHES* AND R. W. WISSLER. *Univ. of Chicago.*

10:45 **2248.** Calcification of aorta in experimental animals. S. Y. YU* AND H. T. BLUMENTHAL. *Jewish Hosp., St. Louis.*

11:00 **2249.** Effects of D-thyroxine in patients with degenerative vascular disease. E. KLEIN, H. BAKER,* H. SANTOS,* K. DRISCOLL* AND S. WOOD.* *Tufts Univ.*

11:15 **2250.** Morphologic effects of pressor agents. ERIC A. SCHENK* AND CHARLES FAULKNER.* *Univ. of Rochester.*

216. Hematology II

THURS. A.M.—RITZ-CARLTON, BALLROOM

Chairmen: W. B. Stewart; G. P. Vennart

9:00 **2251.** Disposal of circulating hemoglobin in human and rat: a comparative study. E. R. GABRIELI,* M. SCHREIBER* AND J. L. WYPYCH.* *Millard Fillmore Research Inst.*

9:15 **2252.** Mechanism of chromate binding to hemoglobin. A. J. SAMUELS,* F. G. EBAUGH, JR. AND F. WATSON.* *Dartmouth Med. Sch.*

9:30 **2253.** Site of the $CrO_4^{=}$-hemoglobin bond as determined by starch electrophoresis and chromatography. F. G. EBAUGH, JR., A. J. SAMUELS,* P. DOBROWOLSKI* AND D. HEISTERKAMP.* *Dartmouth Med. Sch.*

9:45 **2254.** Paper chromatography of hemin. L. D. TOALSON* AND FRED V. LUCAS. *Univ. of Missouri.*

10:00 **2255.** Analysis of porphyrin in hemosiderin by microspectrophotometry. C. L. WELLS* AND J. J. WOLKEN.* *Univ. of Pittsburgh.*

10:15 **2256.** Histone-like basic protein component of gamma globulin. MAURICE M. BLACK* AND LOIS C. LILLICK.* *New York Med. Coll.*

10:30 **2257.** Relationship of gel structure to resolution in gel electrophoresis. SAMUEL RAYMOND,* M. NAKAMICHI,* I. BRODSKY* AND J. BRYANT.* *Univ. of Pennsylvania.*

10:45 **2258.** Evidence of multiple ceruloplasmin components in human serum. GEORGE M. MARTIN,* ROBERT MCALISTER* AND EARL P. BENDITT. *Univ. of Washington.*

11:00 **2259.** Serum electrophoretic patterns and complement levels in tumor-bearing rats. HENRY E. WEIMER, KATHLEEN SMITH* AND DAVID BAXTER.* *UCLA.*

11:15 **2260.** Plasma glycoproteins in rabbit. SIDNEY COOPERBAND* AND EVAN CALKINS.* *Massachusetts Gen. Hosp. and Harvard Med. Sch.* (Physiol.)

217. Kidney II

THURS. A.M.—RITZ-CARLTON, CARLTON ROOM

Chairmen: R. A. Good; L. W. Wattenberg

9:00 **2261.** Comparison of fine structural alterations in aminonucleoside nephrosis with human nephrosis. D. SPIRO,* J. B. CAULFIELD* AND J. CRAIG. *Harvard Med. Sch. and Children's Med. Ctr.*

9:15 **2262.** Aminonucleoside and nephrotoxic serum nephrosis in monkeys. ALFRED F. MICHAEL, JR.,* HOMER VENTERS, JR.* AND ROBERT A. GOOD. *Univ. of Minnesota.*

9:30 **2263.** Mechanism of aminonucleoside nephrosis in rats. CARL S. ALEXANDER,* VINCENT R. HUNT* AND HERBERT T. NAGASAWA.* *Univ. of Minnesota and VA Hosp., Minneapolis.* (Biochem.)

9:45 **2264.** Effect of choline on aminonucleoside nephrosis in rats: effect of proteinuria on fatty livers of choline-deficient rats. B. B. BANSON,* W. S. HARTROFT AND L. REGANT.* *Washington Univ.*

10:00 **2265.** Metabolism of seromucoids in experimental nephrosis. RAYMOND BARCELO* AND DAVID L. DRABKIN. *Univ. of Pennsylvania.* (Biochem.)

10:15 **2266.** Electron microscopy of acute antibasement membrane serum nephritis in rats. R. WINEMILLER,* R. STEBLAY* AND B. SPARGO. *Univ. of Chicago.*

10:30 **2267.** Nephritis in sheep induced by injection of heterologous glomerular basement membrane and Freund's adjuvant. RAYMOND W. STEBLAY.* *Univ. of Chicago.*

10:45 **2268.** Immunologic mechanism of transmission of experimental glomerulonephritis in parabiotic rats. KURT LANGE, MAX WACHSTEIN AND STEPHEN E. MCPHERSON.* *New York Med. Coll.*

11:00 **2269.** Influence of abdominal radiation on response of rabbits to nephrotoxic serum. P. N. SMITH,* B. L. WALKER* AND J. G. BRUNSON. *Univ. of Mississippi.*

Parke, Davis Award Lecture

THURS. A.M.—RITZ-CARLTON, BALLROOM

Chairman: Jacob Furth

11:30 Fifth Annual Parke, Davis Award Lecture.

Pathology Society Sessions—Thursday, 1:30 p.m.

218. Immunopathology

THURS. P.M.—RITZ-CARLTON, RITZ HALL

Chairmen: F. J. Dixon; J. D. Feldman

1:30 **2270.** Electron microscopic studies of antigen-antibody complex. HOWARD C. HOPPS, ALFONSO J. STRANO,* ROBERT A. TURNER* AND H. REDETZKI. *Univ. of Texas Med. Branch.*

1:45 **2271.** Germinal center tissue and the immune mechanism. C. C. CONGDON. *Oak Ridge Natl. Lab.*

2:00 **2272.** Antibody response of rats immunized with purified flagellar antigens. J. W. WINEBRIGHT* AND F. W. FITCH. *Univ. of Chicago.*

2:15 **2273.** Autosensitization to denatured guinea pig gamma globulin. F. MILLER,* R. T. MCCLUSKEY AND B. BENACERRAF. *New York Univ.*

2:30 **2274.** Hemolysin formation in rats passively immunized with homologous antisheep erythrocyte serum. MIRDZA NEIDERS,* DONALD A. ROWLEY AND FRANK W. FITCH. *Univ. of Chicago.*

2:45 **2275.** Pathologic features of experimental immunoallergic arthritis in rabbits. P. BRANCATO,* C. V. TEODORU* AND B. W. VOLK. *Isaac Albert Res. Inst.*

3:00 **2276.** Experimental allergic arthritis. R. T. MCCLUSKEY, P. G. H. GELL* AND D. FELIX-DAVIES.* *New York Univ. and Univ. of Birmingham.*

3:15 **2277.** Isohemagglutinin partition in rheumatoid arthritis. ARNOLD J. RAWSON, NEVA M. ABELSON* AND D. J. MCCARTY.* *Univ. of Pennsylvania.*

3:30 **2278.** Prevention of experimental allergic encephalomyelitis (EAE) by vitamin C deprivation. PETER S. MUELLER,* MARIAN W. KIES AND ELLSWORTH C. ALVORD, JR. *Natl. Insts. of Health and Univ. of Washington.*

3:45 **2279.** Quantitative in vitro assay of murine isoantigens. ROSS BASCH* AND CHANDLER A. STETSON, JR. *New York Univ.*

4:00 **2280.** In vitro demonstration of ablastin antibody to Trypanosoma lewisi. PHILIP A. D'ALESANDRO.* *Rockefeller Inst.*

4:15 **2281.** Specific cytotoxicity of group A streptococcal M protein on sensitized macrophages in vitro. DAVID M. MAEIR* AND MARGARET GALLAGHER.* *Albert Einstein Coll. of Med.*

219. Kidney III

THURS. P.M.—RITZ-CARLTON, BALLROOM

Chairmen: E. R. Fisher; F. W. Stamler

1:30 **2282.** Toxemia of pregnancy induced by progesterone in the rat. F. W. STAMLER. *Univ. of Iowa.*

1:45 **2283.** Role of the macula densa in renin formation. EDWIN R. FISHER. *Univ. of Pittsburgh and VA Hosp.*

2:00 **2284.** Juxtaglomerular cells and renin in experimental hypertension. G. KALEY,* H. DEMOPOULOS* AND B. W. ZWEIFACH. *New York Univ.*

2:15 **2285.** Effects of renal extracts on juxtaglomerular cells, renin content, and zona glomerulosa. CHARLES KUHN,* PHYLLIS M. HARTROFT AND JAMES A. PITCOCK.* *Washington Univ.*

2:30 **2286.** Renal juxtaglomerular cells in acute dietary sodium deficiency. GORDON MILLER* AND PHYLLIS M. HARTROFT. *Washington Univ.*

2:45 **2287.** Vascular lesions in renal and renoprival hypertension in rat. J. CHURG.* *Barnert Mem. Hosp.*

3:00 **2288.** Renal lesion in the white mouse following streptococcal infection. E. B. TAFT, A. S. COHEN* AND J. T. SHARP.* *Massachusetts Gen. Hosp. and Henry Ford Hosp.*

3:15 **2289.** Lymphatics and hydrodynamics in urinary tract infection. J. J. MURPHY AND H. W. SCHOENBERG.* *Univ. of Pennsylvania.*

3:30 **2290.** Kidney maps in the study of human renal disease. DAVID S. BAEIN,* GORDON B. ROBBINS,* CLAIRE TURGEON* AND SHELDON C. SOMMERS. *Boston Univ. and Massachusetts Mem. Hosps.*

220. Tissue Analysis and Metabolism

THURS. P.M.—RITZ-CARLTON, CARLTON ROOM

Chairmen: E. P. Benditt; R. E. Priest

1:30 **2291.** Separation of adenosine, inosine, their 5′-(mono-), (di-), (tri-) phosphates, and their bases (adenine, hypoxanthine) by one-dimensional paper chromatography. ALBERT ARAS,* MILTON BECKER,* ARNOLD BROWN* AND GEORGE HASS. *Presbyterian-St. Luke's Hosp.*

1:45 **2292.** Separation of lipases from tissues of the rat. B. BASKYS,* E. KLEIN, W. F. LEVER* AND NANCY STONE.* *Tufts Univ.*

2:00 **2293.** Appearance of lipolytic activity in the circulation of the human forearm following heparin injection. V. S. LEQUIRE, J. M. MERRILL AND R. L. HAMILTON.* *Vanderbilt Med. Sch. and Thayer Hosp.*

2:15 **2294.** Demonstration of nuclease activity on mammalian skin surface. J. TABACHNICK AND R. FREED.* *Albert Einstein Med. Ctr.*

2:30 **2295.** Manganese in human blood and serum. P. S. PAPAVASILIOU* AND G. C. COTZIAS. *Brookhaven Natl. Lab.*

2:45 **2296.** Thermal denaturation of citric acid soluble human skin collagen of the newborn. SEYMOUR BAKERMAN.* *Univ. of Kansas.*

3:00 **2297.** Biochemistry of emphysematous human lungs. A. M. BRISCOE, W. E. LORING AND J. H. MCCLEMENT.* *Columbia Univ. and New York Univ.*

3:15 **2298.** Variations in paper chromatographic patterns produced from crude vaginal fluids of M. mulatta injected with sex hormones. W. M. BERTON. *Univ. of Tennessee.*

3:30 **2299.** Metabolic pattern of the brain: by-passes. A. GEIGER,* G. GOMBOS,* S. OTSUKI,* W. SCRUGGS* AND G. WHITNEY.* *Univ. of Illinois.*

3:45 **2300.** Glutamic dehydrogenase system in proliferative glial lesions. KENNETH A. OSTERBERG* AND LEE W. WATTENBERG. *Univ. of Minnesota.*

4:00 **2301.** Nucleotide metabolism in streptococci relative to hyaluronic acid synthesis. JOHN BARETA,* GEORGE KINSMAN* AND CHARLES H. ALTSHULER. *St. Joseph's Hosp.*

4:15 **2302.** Hyaluronic acid synthesis by mammalian tissues. CHARLES H. ALTSHULER, GEORGE KINSMAN* AND JOHN BARETA.* *St. Joseph's Hosp.*

4:30 **2303.** Evidence for a hyaluronate-protein complex in human synovial fluid. D. HAMERMAN* AND J. SANDSON.* *Albert Einstein Coll. of Med.* (Pharmacol.)

Nutrition Society Sessions—Thursday, 9:00 a.m.

221. Enzymes and Energy Metabolism

THURS. A.M.—AMBASSADOR "22" CLUB

Chairmen: R. G. Hansen; H. E. Sauberlich

9:00 **2304.** Biosynthesis of selenocoenzyme A in the rat. K. W. LAM,* MARCIA RIEGL* AND ROBERT E. OLSON. *Univ. of Pittsburgh.*

9:15 **2305.** Dietary protein, riboflavin, pyridoxine and thiamine and rat erythrocyte transketolase. MYRON BRIN. *State Univ. of New York.*

9:30 **2306.** Metabolism of C^{14}-6-D-glucuronolactone and C^{14}-6-D-glucuronic acid in man. E. M. BAKER,* H. E. SAUBERLICH AND S. J. WOLFSKILL.* *U.S. Army Med. Res. and Nutrition Lab.*

9:45 **2307.** Non-existence of glycogen in tissues in a form not extractable with cold trichloroacetic acid. JOSEPH H. ROE, J. MARTYN BAILEY,* R. RICHARD GRAY* AND JOHN N. ROBINSON.* *George Washington Univ.*

10:00 **2308.** Diet and glucose uptake by rat epididymal fat tissue. WALTER MERTZ.* *Natl. Insts. of Health.*

10:15 **2309.** Demonstration of the liver ADH-DPNH complex by anomalous rotatory dispersion. DAVID D. ULMER,* TING-KAI LI* AND BERT L. VALLEE. *Harvard Med. Sch. and Peter Bent Brigham Hosp.*

10:30 **2310.** Increased lysosomal enzymes in muscular dystrophy. H. ZALKIN,* A. L. TAPPEL, I. DESAI,* K. CALDWELL* AND D. W. PETERSON. *Univ. of California*

10:45 **2311.** Effect of dietary protein and urea on 5-nucleotidase activity, fructolysis and methylene blue reduction in ram semen. R. L. SHIRLEY, T. N. MEACHAM,* A. C. WARNICK,* P. E. LOGGINS,* L. E. SMITH,* J. F. HENTGES, JR. AND T. J. CUNHA. *Univ. of Florida.*

222. Unidentified Growth Factors

THURS. A.M.—AMBASSADOR, ROTUNDA

Chairmen: D. W. Woolley; R. B. Merrifield

9:00 **2312.** Isolation of growth factors (S-193 and S-300) from crude dietary sources. J. R. COUCH AND H. D. STELZNER.* *Texas Agric. Exper. Sta.*

9:15 **2313.** Partial purification of a thyroid hormone-like substance in hog duodenum. C. J. ACKERMAN AND V. TSOU.* *Virginia Polytechnic Inst.*

9:30 **2314.** An unidentified growth factor(s) from plant sources for guinea pigs—an improved assay. GEORGE M. BRIGGS. *Univ. of California.*

9:45 **2315.** A source of error in vitamin B_6 determination: stimulation of yeast and mold by starch or glucose hydrolysates. W. K. CALHOUN,* P. A. HEDIN* AND W. B. BRADLEY.* *Quartermaster Food and Container Inst. and American Inst. of Baking.*

10:00 **2316.** Growth "stimulation" by phenothiazines in rats fed nutritionally optimal diets. SAMUEL M. GREENBERG, THEODORE ELLISON* AND JOYCE K. MATHUES.* *Smith Kline & French.*

10:15 **2317.** Effect of gibberellic acid-treated alfalfa on growth and hematological constituents of guinea pigs. HARISH C. SAXENA AND SUDHIR KUMAR.* *Rajasthan Coll. of Agriculture.*

10:30 **2318.** Depression of urease activity in the gastrointestinal tract by chemical agents. W. J. VISEK, A. I. JACOBSON,* M. E. IWERT* AND A. P. ALVAREZ.* *Univ. of Chicago.*

10:45 **2319.** Growth-promoting activity of vitamin B_{12} and two crystalline grasshopper pigments. L. E. BURGESS,* MARIAN P. COLES* AND D. T. ROLFE. *Meharry Med. Coll.* (Physiol.)

Nutrition Society Business Meeting

THURSDAY, 11:00 A.M.—AMBASSADOR "22" CLUB

Nutrition Society Sessions—Thursday, 1:30 p.m.

223. SYMPOSIUM: Nutritional Significance of Selenium (Factor 3)

THURS. P.M.—AMBASSADOR, "22" CLUB

Chairmen: K. Schwarz; E. L. Hove

1:30 **2320.** Introduction. Development and status of experimental work on Factor 3-selenium. K. SCHWARZ. *Natl. Insts. of Health.*

2:05 **2321.** Nutritional effects of selenium compounds in chicks and turkeys. M. C. NESHEIM* AND M. L. SCOTT. *Cornell Univ.*

2:25 **2322.** Selenium deficiency diseases in New Zealand. W. J. HARTLEY.* *Wallaceville Animal Res. Sta., New Zealand Dept. of Agriculture.*

3:15 **2323.** Experimental results with selenium in white muscle disease of lambs and calves. J. R. SCHUBERT,* O. H. MUTH,* J. E. OLDFIELD* AND L. F. REMMERT.* *Oregon State Coll.*

3:45 **2324.** Selenium metabolism in plants and microorganisms. A. SHRIFT.* *Kaiser Res. Fndn.*

224. Protein II: Metabolism

THURS. P.M.—AMBASSADOR, ROTUNDA

Chairmen: J. Allison; M. W. Taylor

1:30 **2325.** Effect of calorie intake on biochemical lesions associated with protein malnutrition. FLORENCE THEOPHILUS* AND RICHARD H. BARNES. *Cornell Univ.*

1:45 **2326.** Addition of moisture to semisynthetic diets and its effect on growth and protein efficiency ratio. KENNETH

W. KEANE,* CHARLES SMUTKO,* ARNOLD E. DENTON* AND CARL H. KRIEGER. *Campbell Soup Co.*

2:00 **2327.** Protein digestibility as affected by dietary protein and carbohydrate. B. E. RUTHERFORD* AND D. C. CEDERQUIST. *Michigan State Univ.*

2:15 **2328.** Protein quality of waste grown green algae alone and in combination with cereal and milk proteins. B. B. COOK* AND E. W. LAU.* *Univ. of California.*

2:30 **2329.** Growth inhibition by unheated soybeans. RICHARD H. BARNES, EVA KWONG* AND GRACE FIALA.* *Cornell Univ.*

2:45 **2330.** Effect of previous dietary protein level on body composition of pigs fed a nonprotein diet. L. J. FILER, JR., OLIVER W. VAUGHAN* AND HELEN REZABEK. *Ross Labs.*

3:00 **2331.** Amino acid supplements required by turkey poults on a 20% protein diet. C. W. CARLSON. *South Dakota State Coll.*

3:15 **2332.** Fish protein as a source of amino acids in a purified diet for chicks. T. R. ZEIGLER* AND M. L. SCOTT. *Cornell Univ.*

3:30 **2333.** Nutritional value of proteins of turkey meat. S. P. YANG,* HELEN E. CLARK AND JACLIN H. CHRISTIAN.* *Purdue Univ.*

3:45 **2334.** Pepsin inhibition by carrageenin. OLIVER W. VAUGHAN,* HELEN REZABEK* AND L. J. FILER, JR. *Ross Labs.*

4:00 **2335.** Distribution of excreted nitrogen from honey bees fed various protein sources. W. F. MCCAUGHEY,* JOSEPH B. MCNALLY* AND FRANK E. TODD. *U.S. Dept. of Agriculture Agric. Res. Serv. and Univ. of Arizona.*

4:15 **2336.** Urea metabolism in the rabbit. T. RICHARD HOUPT.* *Univ. of Pennsylvania.* (Physiol.)

4:30 **2337.** Effect of age on concentrations of enzymes in livers and kidneys of normal, protein-depleted and protein-repleted rats. C. H. BARROWS, JR. AND LOIS M. ROEDER.* *Natl. Insts. of Health and Baltimore City Hosps.*

Lost and Found

Federation Office, Room 8, Convention Hall

Future Annual Meetings

Federation Annual Meetings for the next three years will be held as follows: 1962, April 16–21, Atlantic City; 1963, April 15–20, Atlantic City; 1964, April 12–18, Chicago.

Immunology Society Sessions—Thursday, 9:00 a.m.

225. Antibody Formation II

THURS. A.M.—SHELBURNE, GRANDE BALLROOM

Chairman: F. J. Dixon, Jr.

9:00 **2338.** Antibodies formed by specifically unresponsive rabbits. C. F. CRAMPTON, A. L. GODBEY* AND A. WALL.* *Miller Health Ctr.* (Biochem.)

9:15 **2339.** Antigen disappearance in hibernating ground squirrels (Citellus tridecemlineatus). B. N. JAROSLOW AND D. E. SMITH. *Argonne Natl. Lab.* (Physiol.)

9:30 **2340.** Immunological unresponsiveness in inbred mice. G. W. SISKIND* AND G. J. THORBECKE. *New York Univ.*

9:45 **2341.** Immunologic response of young rabbits to Shigella antigen. S. HARRIS, T. N. HARRIS, C. A. OGBURN* AND M. B. FARBER.* *Univ. of Pennsylvania.*

10:00 **2342.** Rise in antibody activity in cell-free spleen preparations. DIETER H. SÜSSDORF.* *California Inst. of Technology.*

10:15 **2343.** Cellular localization of radioactivity following intraperitoneal injection of tritiated tetanus toxin. R. S. SPEIRS. *New York State Univ.* (Physiol.)

10:30 **2344.** Antibody production in vitro by spleen and bone marrow at various days after injection of antigen. G. J. THORBECKE, R. ASOFSKY,* G. M. HOCHWALD* AND G. W. SISKIND.* *New York Univ.*

10:45 **2345.** Use of 0.1 μ diffusion chambers for primary and secondary agglutinin responses by spleen cells. ELMO E. CAPALBO,* PAUL URSO* AND W. D. GUDE.* *Oak Ridge Natl. Lab.*

11:00 **2346.** Morphologic differentiation of normal and stimulated rabbit lymph node cells in millipore chambers. W. V. EPSTEIN* AND M. R. ROSS.* *Univ. of California.*

11:15 **2347.** Effect of time of antigen injection on the antibody response by transplanted isologous spleen cells. EUGENE H. PERKINS* AND MARTHA A. ROBINSON.* *Oak Ridge Natl. Lab.*

11:30 **2348.** Blocking type agglutinins in neonatal rats resulting from injection of adult rat splenic cells sensitized in vitro with Brucella antigen. BENJAMIN WOLF* AND ISRAEL LIVE. *Univ. of Pennsylvania.*

11:45 **2349.** Significance of mitosis and maturation in secondary precipitin response. PAUL URSO* AND TAKASHI MAKINODAN. *Oak Ridge Natl. Lab.*

12:00 **2350.** Transfer of antibody-producing capacity from intestinal to other lymphatic tissue. RICHARD S. FARR AND WINIFRED DICKINSON.* *Univ. of Pittsburgh.*

226. Viruses III

THURS. A.M.—SHELBURNE, KERRY HALL

Chairman: R. Rustigian

9:00 **2351.** Stimulation of DNA synthesis during equine abortion virus infection in vivo. G. A. GENTRY* AND C. C. RANDALL. *Univ. of Mississippi.*

9:15 **2352.** Properties of a transmissible agent capable of degrading DNA and catabolizing thymine in a human cell. R. S. CHANG.* *Harvard Univ.*

9:30 **2353.** Electron microscopy of pseudorabies virus (Pr) produced by rabbit kidney (RK) cells treated with 5-fluorouracil (FU). MAGDALENA REISSIG AND ALBERT S. KAPLAN. *Einstein Med. Ctr., Philadelphia.*

9:45 **2354.** Effect of p-fluorophenylalanine on adenovirus synthesis. WESLEY C. WILCOX AND HAROLD S. GINSBERG. *Univ. of Pennsylvania.*

10:00 **2355.** Effect of 5-fluorodeoxyuridine on synthesis of type 4 adenovirus. JOHN F. FLANAGAN* AND HAROLD S. GINSBERG. *Univ. of Pennsylvania.*

10:15 **2356.** Fluorescent antibody studies on parainfluenza viruses. CHIEN LIU, IL SUN CHU,* ELEANOR SHARP* AND ANNE DETERT.* *Univ. of Kansas.*

10:30 **2357.** Strain relationships among parainfluenza viruses. KEITH E. JENSEN. *Chas. Pfizer.*

10:45 **2358.** Clinical and serologic responses in volunteers given vacuolating virus by respiratory route. J. A. MORRIS, K. M. JOHNSON,* C. G. AULISIO,* R. M. CHANOCK* AND V. KNIGHT.* *Natl. Insts. of Health.*

11:00 **2359.** Multiplication of influenza virus in lungs of partially immunized mice. R. POLLIKOFF,* J. KOSOWSKY* AND O. LIU. *Smith, Kline and French.*

11:15 **2360.** Some properties and prevalence of Coe virus. ANDREW ABRAHAM.* *Univ. of Pittsburgh.*

227. Blood Groups

THURS. A.M.—SHELBURNE, CORAL REEF ROOM

Chairman: M. W. Chase

9:00 **2361.** Specificity of urinary blood group substances. HAROLD BAER AND ALLAN KLIMAN.* *Natl. Insts. of Health.*

9:15 **2362.** Urinary substance with blood-group activity. M. L. FIELDEN,* J. S. KING, JR.* AND W. H. BOYCE.* *Bowman Gray Sch. of Med.* (Biochem.)

9:30 **2363.** A Caucasian family with the minus minus phenotype, Lu(a-b-). TIBOR J. GREENWALT, MARY N. CRAWFORD,* RUTH SANGER* AND R. R. RACE.* *Milwaukee Blood Ctr., Children's Hosp., Philadelphia and Lister Inst.*

9:45 **2364.** Expansion of the A system of bovine blood groups. CLYDE STORMONT. *Univ. of California.*

10:00 **2365.** A "new" subgroup of A. KURT STERN. *Chicago Med. Sch. and Univ. of Illinois.*

10:15 **2366.** Oligosaccharides of blood group A substance from ovarian cyst fluid. G. SCHIFFMAN* AND E. A. KABAT. *Columbia Univ.*

10:30 **2367.** Immunochemistry of human and plant blood-group H(O) active substances. GEORG F. SPRINGER, BARBARA READLER* AND PETER WILLIAMSON.* *Univ. of Pennsylvania.*

10:45 **2368.** Degradation of blood-group H(O) active plant polysaccharides. PETER WILLIAMSON* AND GEORG F. SPRINGER *Univ. of Pennsylvania.*

11:00 **2369.** Antigenic constituents of blood platelets. FRED GORSTEIN,* CHAO PAN* AND PETER MIESCHER.* *New York Univ.*

11:15 **2370.** Immunogenetics of rabbit γ-globulin allotypes. SHELDON DRAY AND GLENDOWLYN O. YOUNG.* *Natl. Insts. of Health.*

Immunology Society Sessions—Thursday, 1:30 p.m.

228. Hypersensitivity II

THURS. P.M.—SHELBURNE, GRANDE BALLROOM

Chairman: E. J. Hehre

1:30 **2371.** Inactivation in vitro of endotoxin by intracellular liver enzyme. R-J. TRAPANI,* V. S. WARAVDEKAR,* M. LANDY AND M. J. SHEAR.* *Natl. Cancer Inst., and Armed Forces Inst. of Pathology.*

1:45 **2372.** Necrotizing effect of the lipoid A component of endotoxin on mouse sarcoma 180. E. NETER, E. MIHICH* AND O. WESTPHAL.* *Roswell Park Mem. Inst.*

2:00 **2373.** Mechanism of the endotoxin induced hypersusceptible state (EIHS) to snake venoms. E. V. STAAB* AND R. A. BRIDGES. *Univ. of Minnesota.*

2:15 **2374.** Vascular localization of soluble antigen-antibody complexes injected intravenously. C. G. COCHRANE.* *Univ. of Pittsburgh.*

2:30 **2375.** Local Shwartzman phenomenon in the guinea pig. HERBERT C. MANSMANN, JR.* *Univ. of Pittsburgh.*

2:45 **2376.** Accelerated skin reactions at retest sites in delayed hypersensitive guinea pigs. BARRY G. ARNASON* AND BYRON H. WAKSMAN. *Harvard Univ.*

3:00 **2377.** Delayed hypersensitivity to bovine insulin in guinea pigs. HUGH O. MCDEVITT.* *Harvard Univ.*

3:15 **2378.** Specificity of delayed versus immediate hypersensitivity reactions in guinea pigs. B. BENACERRAF AND B. B. LEVINE.* *New York Univ.*

3:30 **2379.** Natural delayed iso-hypersensitivity among inbred guinea pigs. JACK R. BATTISTO.* *Albert Einstein Coll. of Med.*

3:45 **2380.** Effect of 6-mercaptopurine (6-MP) on antibody production. R. M. CONDIE,* W. I. MENNIS* AND CAROLYN MILLER.* *Univ. of Minnesota.*

4:00 **2381.** Effect of 6-mercaptopurine on inflammation. ARTHUR R. PAGE* AND RICHARD M. CONDIE.* *Univ. of Minnesota.*

4:15 **2382.** Effect of methotrexate on the development of skin hypersensitivity and on antibody formation in guinea pigs. ROBERT M. FRIEDMAN,* CHARLES BUCKLER* AND SAMUEL BARON. *Natl. Insts. of Health.*

229. Antigens and Antibodies III

THURS. P.M.—SHELBURNE, KERRY HALL

Chairman: S. M. Beiser

1:30 **2383.** Physical characterization of antigen retained following immunization. ANIL SAHA* AND J. S. GARVEY. *California Inst. of Technology.*

1:45 **2384.** Quantitation and radioautographic localization of H^3-labeled antigen in tissues of hyperimmunized mice. AUDREY N. ROBERTS* AND F. HAUROWITZ. *Indiana Univ.*

2:00 **2385.** Fate and microphagocytosis of injected ferritin in mice. HANS-JOBST WELLENSIEK.* *Harvard Univ.*

2:15 **2386.** Retention of antigen in the spleen of immune and immunologically tolerant chickens. A. A. HIRATA.* *Natl. Cancer Inst. and California Inst. of Technology.*

2:30 **2387.** Termination of tolerance to bovine serum albumin (BSA) in rabbits. W. O. WEIGLE. *Univ. of Pittsburgh.*

2:45 **2388.** Suppression of transferred lymph node cells in adult and neonatal recipient rabbits. T. N. HARRIS, SUSANNA HARRIS AND MIRIAM B. FARBER.* *Univ. of Pennsylvania.*

3:00 **2389.** Immunochemical characterization of the DNA immune system in lupus erythematosus serum. DAVID STOLLAR* AND LAWRENCE LEVINE. *Brandeis Univ.*

3:15 **2390.** Immunoelectrophoretic analysis of antinuclear antibody reactions. WILLIAM A. ATCHLEY.* *Univ. of California.*

3:30 **2391.** Purification of fluorescent conjugates by column chromatography. JOHN H. PETERS,* H. O. MCDEVITT,* L. W. POLLARD,* J. G. HARTER* AND A. H. COONS. *Harvard Univ.*

3:45 **2392.** Protein "profile" of human erythrocytes. H. MARKOWITZ, A. S. HILL, JR.,* G. E. CARTWRIGHT* AND M. M. WINTROBE. *Univ. of Utah.*

4:00 **2393.** Immunologically active thyroglobulin fragments. HENRY METZGER AND GORDON C. SHARP. *Natl. Insts. of Health.* (Physiol.)

Friday, April 14

Intersociety Sessions—Friday, 9:00 a.m.

230. Neuropharmacology X

FRI. A.M.—CONVENTION HALL, ROOM A

Chairman: A. M. Shanes

9:00 **2394.** Emetic and pyrogenic effects of Staphylococcus enterotoxin (S. E.) in cats. W. G. CLARK,* G. F. VANDERHOOFT* AND H. L. BORISON. *Univ. of Utah.* (Pharmacol.)

9:15 **2395.** Blood CSF exchange studied by ventricular perfusion. S. S. CARDOSO* AND D. SYMMES.* *Yale Univ.* (Pharmacol.)

9:30 **2396.** Intraventricular injection of venoms. FINDLAY E. RUSSELL AND VERNON C. BOHR. *Coll. of Med. Evangelists.* (Physiol.)

9:45 **2397.** Urea distribution and CSF pressure change in rats following urea loading. DONAL J. REED* AND DIXON M. WOODBURY. *Univ. of Utah.* (Pharmacol.)

10:00 **2398.** Distribution of thiocyanate between the cerebrospinal fluid and blood plasma. E. STREICHER,* D. P. RALL* AND J. R. GASKINS.* *Natl. Insts. of Health.* (Physiol.)

10:15 **2399.** Pharmacological studies of the blood-brain barrier. PAUL MAZEL* AND MILTON T. BUSH. *Vanderbilt Univ.* (Pharmacol.)

10:30 **2400.** Threshold doses of lysergic acid diethylamide, a method for exploring antagonism of this drug by other agents. HENRY B. MURPHREE,* ROY H. DIPPY,* CARL C. PFEIFFER AND HARRY L. WILLIAMS. *Emory Univ. and New Jersey Neuropsychiatric Inst.* (Pharmacol.)

10:45 **2401.** Alterations in responsiveness to reserpine following chronic brain lesions in rats. MARTIN W. ADLER.* *Albert Einstein Coll. of Med.* (Pharmacol.)

11:00 **2402.** EEG desynchronization during behavioral sleep associated with spike discharges from the thalamus of the cat. TERRY M. MIKITEN,* PETER H. NIEBYL* and CHARLES D. HENDLEY. *Schering Corp.* (Pharmacol.)

11:15 **2403.** Recovery curves of elements of the sensory pathways. DAVID L. WINTER,* PETER KELLAWAY AND JAMES FROST.* *Baylor Univ.* (Physiol.)

231. Adrenal Cortex II

FRI. A.M.—CONVENTION HALL, ROOM 20

Chairman: P. L. Munson

9:00 **2404.** Steroids produced by rat adrenals in vitro. H. SHEPPARD, T. F. MOWLES* AND R. A. SWENSON.* *Ciba Pharmaceut. Prod.* (Pharmacol.)

9:15 **2405.** Direct inhibitory effect of hydrocortisone on hydrocortisone synthesis. W. C. BLACK,* R. S. CRAMPTON,* A. S. VERDESCA,* R. I. NEDELJKOVIC* AND J. G. HILTON. *St. Luke's Hosp., New York.* (Physiol.)

9:30 **2406.** Steroid hydroxylation in merged rat adrenal-testis homogenates. F. G. HOFMANN. *Columbia Univ.* (Pharmacol.)

9:45 **2407.** In vitro stimulation of gluconeogenesis by glucocorticoids. R. C. HAYNES, JR. *Western Reserve Univ.* (Pharmacol.)

10:00 **2408.** Effects of glucocorticoids in vivo and in vitro on net glucose uptake by rat epididymal fat pads. A. MUNCK.* *Dartmouth Med. Sch.* (Physiol.)

10:15 **2409.** Action of adenosine-3′,5′-monophosphate in beef adrenal cortex. G. A. RILEY* AND R. C. HAYNES, JR. *Western Reserve Univ.* (Pharmacol.)

10:30 **2410.** Cortisone and metabolic response to thyroid hormones. S. B. BARKER AND H. SHIDA.* *Univ. of Alabama Med. Ctr.* (Pharmacol.)

10:45 **2411.** Effect of Mer/29 (triparanol) on corticosterone secretion by rat adrenals. J. HOLLOSZY* AND A. EISENSTEIN. *Jewish Hosp. of St. Louis.* (Nutr.)

11:00 **2412.** Effect of various steroids on adrenal regeneration. J. J. CHART, N. HOWIE* AND F. KRAUSER.* *Ciba Pharmaceut. Prod.* (Physiol.)

11:15 **2413.** Thymolytic activity of corticosteroid analogues by oral route of administration. N. R. STEPHENSON.* *Natl. Health and Welfare, Ottawa, Canada.* (Biochem.)

11:30 **2414.** Effects of chymotrypsin and other agents on burn inflammation in the rat. G. R. BOBALIK* AND J. W. BASTIAN.* *Armour Pharmaceut. Co., Kankakee.* (Pharmacol.)

232. Bone and Ca Metabolism

FRI. A.M.—CONVENTION HALL, ROOM 21

Chairman: F. Bronner

9:00 **2415.** Effect of calcium and phosphorus on magnesium metabolism in chicks. D. NUGARA* AND H. M. EDWARDS, JR. *Univ. of Georgia.* (Nutr.)

9:15 **2416.** Effect of stable strontium on radiostrontium metabolism in man. H. SPENCER,* M. ROQUE,* M. LI* AND J. SAMACHSON. *Montefiore Hosp., New York.* (Physiol.)

9:30 **2417.** Absorption and excretion of C^{14} chelates in man. E. STEVENS,* B. ROSOFF,* A. FELDSTEIN,* M. WEINER AND H. SPENCER.* *Montefiore Hosp., New York.* (Physiol.)

9:45 **2418.** Ca excretion index—a new parameter for metabolic studies utilizing Ca^{45}. F. BRONNER, P. D. SAVILLE* AND J. A. NICHOLAS.* *Hosp. for Special Surgery and Cornell Univ. Med. Coll.* (Physiol.)

10:00 **2419.** Effect of NH_4Cl and of mercurials on calcium and phosphorus excretion. L. BOSLEY,* H. SPENCER,* M. ROQUE* AND J. SAMACHSON.* *Montefiore Hosp., New York.* (Physiol.)

10:15 **2420.** Skeletal role in fluoride homeostasis. W. D. ARMSTRONG AND L. SINGER. *Univ. of Minnesota.* (Biochem.)

10:30 **2421.** Citrate metabolism and bone mineral solubility; estradiol and Parathormone effects. G. VAES* AND G. NICHOLS, JR.* *Harvard Med. Sch.* (Biochem.)

10:45 **2422.** Crystal dissolution in mineralizing tissues. A. E. SOBEL AND G. R. GOLDBERG.* *Jewish Hosp. of Brooklyn.* (Biochem.)

11:00 **2423.** Cat bone marrow aO_2. G. A. MISRAHY, D. F. HARDWICK,* C. J. BROOKS* AND W. P. HALL.* *Childrens Hosp., Los Angeles.* (Physiol.)

11:15 **2424.** Bone cell metabolism, parathyroid hormone and bone resorption. S. SCHARTUM* AND G. NICHOLS, JR. *Harvard Med. Sch.* (Physiol.)

11:30 **2425.** Effects of sodium chloride acidosis on parathyroid function. R. V. TALMAGE. *Rice Univ.* (Physiol.)

233. Blood Clotting V

FRI. A.M.—SHELBURNE, CORAL REEF ROOM

Chairmen: M. N. Guest; T. H. Spaet

9:00 **2426.** Effects of surface on plasminogen activation. S. G. IATRIDIS.* *Univ. of North Carolina.* (Physiol.)

9:15 **2427.** Purification and activation of plasminogen. KARL H. SLOTTA, DONN KEELS,* H. MICHL* AND B. G. SANTOS.* *Univ. of Miami.* (Biochem.)

9:30 **2428.** Molecular changes in plasminogen. UBALDO RIFE* AND SIDNEY SHULMAN. *Univ. of Buffalo.* (Biochem.)

9:45 **2429.** Assay of commercial preparations of human fibrinolysin for components of fibrinolytic enzyme system. D. R. CELANDER* AND M. M. GUEST. *Univ. of Texas.* (Physiol.)

10:00 **2430.** Heterogeneity of streptokinase-induced plasmin. GABOR MARKUS* AND W. C. WERKHEISER.* *Roswell Park Mem. Inst. and Univ. of Buffalo.* (Physiol.)

10:15 **2431.** Purification of streptokinase. JOHN L. GRAY, W. F. BLATT AND H. A. SEGAL. *U.S. Army Med. Res. Lab., Fort Knox.* (Physiol.)

10:30 **2432.** A simplified method for determination of antiplasmin activity in human serum. DENNIS ADAMIS,* MARIO STEFANINI AND ELIO GAGLIANO.* *St. Elizabeth Hosp. and Tufts Univ.* (Physiol.)

10:45 **2433.** Characterization of blood coagulation product I. D. ZUCKER-FRANKLIN,* J. JAVID* AND T. H. SPAET. *Montefiore Hosp.* (Physiol.)

11:00 **2434.** Papain induced lipemia and coagulation defect in rabbits. T. T. TSALTAS. *Jefferson Med. Coll.* (Pathol.)

11:15 **2435.** Blood clotting changes in anticoagulant therapy. S. GOLLUB* AND W. LIKOFF.* *Hahnemann Med. Coll. an Hosp.* (Physiol.)

11:30 **2436.** Changes in hemostatic potential and mechanical support of the blood vessel wall produced by dextran, anticoagulants, hyaluronidase, and moccasin snake venom. HERBERT J. BERMAN* AND ELAINE ROSEN.* *Boston Univ.* (Physiol.)

Intersociety Sessions—Friday, 1:00 p.m.

234. SYMPOSIUM: Lipid Metabolism

Cosponsored by the American Heart Association

FRI. P.M.—CONVENTION HALL, BALLROOM

Chairman: H. G. Wood

1:00 **2437.** Introduction. H. G. WOOD. *Western Reserve Univ.*

1:10 **2438.** Synthesis and metabolism of unsaturated fatty acids. K. BLOCH. *Harvard Univ.*

1:45 **2439.** Digestion, absorption and transport of lipids. B. BORGSTROM. *Univ. of Lund.*

2:20 **2440.** Biosynthesis of complex lipids. E. KENNEDY. *Harvard Univ.*

2:55 **2441.** Biosynthesis of saturated fatty acids. F. LYNEN. *Inst. fur Zellchemie, Munchen.*

3:30 **2442.** Synthesis and metabolism of polyunsaturated fatty acids. J. F. MEAD. *UCLA.*

235. Cytology III

FRI. P.M.—CONVENTION HALL, ROOM F

Chairmen: W. H. Carnes; M. Chiga

1:00 **2443.** Cryptic factor of yeast catalase. J. G. KAPLAN. *Dalhousie Univ.* (Physiol.)

1:15 **2444.** Ultracentrifugal studies of microsomes from growing and budding yeast. ALLAN L. LOUDERBACK,* OTTO H. SCHERBAUM AND THEODORE L. JAHN. *UCLA.* (Physiol.)

1:30 **2445.** Speed of locomotion and acetylcholinesterase in aging tetrahymena. MARY CUSTIS STRAUGHN* AND R. R. RONKIN. *Univ. of Delaware.* (Physiol.)

1:45 **2446.** Electron microscope observations on the behavior of cytoplasm during merozoite formation in a malarial parasite (Plasmodium lophurae). MARIA A. RUDZINSKA* AND WILLIAM TRAGER. *Rockefeller Inst.* (Pathol.)

2:00 **2447.** Synchronous mitoses in starved plasmodia of the myxomycete Physarum polycephalum. EDMUND GUTTES* AND SOPHIE GUTTES.* *Brown Univ.* (Physiol.)

2:15 **2448.** Narcosis of paramecia with xenon. D. F. SEARS* AND S. M. GITTLESON.* *Tulane Univ.* (Physiol.)

2:30 **2449.** Implications of cell flow between morphologic compartments on H^3 thymidine labeling index (LI) variations in human bone marrow. P. G. REIZENSTEIN,* E. P. CRONKITE, V. P. BOND, T. M. FLIEDNER* AND J. S. ROBERTSON. *Brookhaven Natl. Labs.* (Physiol.)

2:45 **2450.** Effects of adrenal androgens on the weight and histology of the adrenal glands in immature female mice. HAROLD H. VARON* AND JOHN J. CHRISTIAN. *Naval Med. Res. Inst. and Univ. of Pennsylvania.* (Pathol.)

3:00 **2451.** Destruction of epidermal cells by autologous serum. PAUL I. TERASAKI,* CHARLES C. CHAMBERLAIN,* JACK A. CANNON* AND WILLIAM P. LONGMIRE, JR.* *UCLA.* (Pathol.)

3:15 **2452.** Factors affecting survival of mouse skin during freezing and thawing. J. K. SHERMAN. *Univ. of Arkansas.* (Physiol.)

236. Atherosclerosis V: General Studies

FRI. P.M.—CONVENTION HALL, ROOM B

Chairmen: Grace Goldsmith; O. N. Miller

1:00 **2453.** Incorporation of substrate carbon into protein of rat adipose tissue in vitro: effects of starvation and realimentation. M. GUILLERMO HERRERA* AND ALBERT E. RENOLD.* *Harvard Med. Sch.* (Nutr.)

1:15 **2454.** Effect of cold on experimental atherosclerosis. G. V. VAHOUNY,* A. MOEDE* AND C. R. TREADWELL. *George Washington Univ.* (Nutr.)

1:30 **2455.** Effect of dietary cholesterol on adrenal cholesterol storage in the rat. DORIS D. TAYLOR.* *U.S. Dept. of Agriculture.* (Nutr.)

1:45 **2456.** Effects of adrenaline chloride on blood cholesterol of cockerels fed an atherogenic diet. T. F. JOHNSON,* H. Y. C. WONG, C. SAMPSON,* F. M. FARROW* AND R. Y. SHIM.* *Howard Univ.* (Physiol.)

2:00 **2457.** Influence of dietary fat on serum and tissue cholesterol levels in hyper-, hypo-, and euthyroid rats. KAROLY G. PINTER,* JAMES G. HAMILTON* AND O. NEAL MILLER. *Tulane Univ.* (Nutr.)

2:15 **2458.** Effect of reserpine on lipoprotein lipase activity of rat heart. ABRAHAM DURY. *VA Hosp. and Univ. of Pittsburgh.* (Physiol.)

2:30 **2459.** Influence of dietary lipids on reticulo-endothelial function. N. R. DI LUZIO, J. A. LOGUE* AND S. J. RIGGI.* *Univ. of Tennessee.* (Physiol.)

2:45 **2460.** Influence of triparanol (Mer-29) on experimental atherosclerosis of cholesterol-fed cockerels. H. Y. C. WONG, F. FARROW,* R. SHIM,* D. VON ENDT* AND F. B. JOHNSON.* *Howard Univ. and Armed Forces Inst. of Pathology.* (Physiol.)

3:00 **2461.** Effect of immunization on serum lipids, proteins, and atherosclerosis in cholesterol-fed rabbits. SAUL P. BAKER, A. S. MARKOWITZ,* PAUL B. SZANTO* AND ALVIN DUBIN.* *Chicago Med. Sch. and Cook County Hosp.* (Physiol.)

3:15 **2462.** An ion-exchange procedure for separating bile acids from feces and serum. GUNTHER W. KURON* AND DAVID M. TENNENT. *Merck Inst. for Therap. Res.* (Biochem.)

3:30 **2463.** Social milieu and atherosclerosis in cockerels. R. PICK AND L. N. KATZ. *Michael Reese Hosp. and Med. Ctr.* (Physiol.)

237. Neuropharmacology XI

FRI. P.M.—CONVENTION HALL, ROOM A

Chairman: B. E. Abreu

1:00 **2464.** A depressant effect of methamphetamine on avoidance behavior. THOM VERHAVE. *Lilly Research Labs.* (Pharmacol.)

1:15 **2465.** Effects of chronic methamphetamine administration in the cat. GERALD FEINBERG* AND SAMUEL IRWIN. *Schering Corp.* (Pharmacol.)

1:30 **2466.** Effect of LSD, BOL and chlorpromazine on serotonin levels. D. B. SANKAR,* E. GOLD,* E. PHIPPS* AND D. V. SIVA SANKAR.* *Creedmoor State Hosp.* (Pharmacol.)

1:45 **2467.** Effect of psychopharmacological agents on DPN-dependent enzymes. D. V. SIVA SANKAR,* E. GOLD,* B. SANKAR* AND N. MCRORIE.* *Creedmoor State Hosp.* (Biochem.)

2:00 **2468.** A central nervous system component of the hyperglycemic response to exogenous epinephrine. FRANKLIN J. ROSENBERG* AND VICTOR DISTEFANO. *Univ. of Rochester.* (Pharmacol.)

2:15 **2469.** Effects of norepinephrine on evoked responses in the hypothalamic ventromedial nucleus. LUCAS S. VAN ORDEN* AND JEROME SUTIN. *Yale Univ.* (Physiol.)

2:30 **2470.** Reserpine effects in depressed patients treated with an MAO inhibitor. OSCAR RESNICK* AND HARRY FREEMAN.* *Worcester Fndn. for Exper. Biol. and Medfield State Hosp.* (Physiol.)

2:45 **2471.** Unique central effects of a new nonbarbiturate anesthetic. J. C. BRINLING,* T. D. SHOPIRO* AND E. B. SIGG. *Geigy Res. Labs.* (Physiol.)

3:00 **2472.** Barbiturate tolerance and liver glutathione in the rat. TOM S. MIYA, NORWOOD R. NEUMANN* AND GEORGE K. W. YIM.* *Purdue Univ.* (Pharmacol.)

3:15 **2473.** Peripherally evoked potentials in brain of monkey and their alteration by pentobarbital. I. H. WAGMAN AND S. FELDMAN.* *Mt. Sinai Hosp.* (Physiol.)

238. Sex Hormones

FRI. P.M.—CONVENTION HALL, ROOM 20

Chairman: W. F. Ganong

1:00 **2474.** Release of progesterone from rabbit ovary in response to gonadotropic stimulation. J. HILLIARD,* E. ENDROCZI* AND C. H. SAWYER. *UCLA and VA Hosp., Long Beach.* (Physiol.)

1:15 **2475.** Comparison of biological activities of progesterone, norethisterone and acetophenone derivative of 16a, 17a-dihydroxyprogesterone. L. J. LERNER,* D. M. BRENNAN,* M. DEPHILLIPO* AND E. YIACAS. *Squibb Inst. for Med. Res.* (Biochem.)

1:30 **2476.** Metabolite of progesterone related to aldosterone formed by rat adrenals. O. V. DOMINGUEZ,* D. W. URRY* AND L. T. SAMUELS. *Univ. of Utah.* (Biochem.)

1:45 **2477.** In vitro progesterone metabolism by avian testicular tissue homogenates. H. R. FEVOLD* AND K. B. EIK-NES. *Univ. of Utah.* (Physiol.)

2:00 **2478.** Excretion of free 17-ketosteroids. J. J. GOLD AND S. GOLDBERG. *Michael Reese Hosp.* (Physiol.)

2:15 **2479.** Occurrence of stilbestrol in eggs of treated hens. E. J. UMBERGER,* D. BANES,* F. M. KUNZE* AND S. M. HAISE*. *Food and Drug Admin.* (Biochem.)

2:30 **2480.** Effect of testosterone on cytoplasmic ribonucleic acid and protein-bound sulfhydryl and disulfide in rat seminal vesicle epithelium. C. RITTER.* *State Univ. of New York.* (Pharmacol.)

2:45 **2481.** Anabolic properties of 4-chloro-19-nortestosterone acetate, SK&F 6611. H. L. SAUNDERS* AND M. C. DOGGETT.* *Smith Kline & French.* (Pharmacol.)

3:00 **2482.** Effect of nitrogen on testosterone stimulation of respiration in euglena. D. E. BUETOW* AND B. H. LEVEDAHL.* *Natl. Heart Inst., Baltimore City Hosps. and UCLA.* (Physiol.)

239. Thyroid; Parathyroid

FRI. P.M.—CONVENTION HALL, ROOM 21

Chairman: C. L. Gemmill

1:00 **2483.** Thyroid function in fetal rats. J. H. BIRNIE AND F. E. MAPP.* *Morehouse Coll., Atlanta.* (Physiol.)

1:15 **2484.** Intracellular colloid droplets in thyroid gland. S. H. WOLLMAN AND S. S. SPICER. *Natl. Insts. of Health.* (Physiol.)

1:30 **2485.** Effect of varying concentrations of I^{131} on incorporation of iodide into protein by sheep thyroid homogenates. G. C. SCHUSSLER.* *U.S. Army Med. Res. & Nutrition Lab., Denver.* (Biochem.)

1:45 **2486.** Reversible dissociation of thyroid iodide per-

oxidase into prosthetic group and apoprotein. N. M. ALEXANDER. *VA Hosp., West Haven and Yale Univ.* (Biochem.)

2:00 **2487.** Ion exchange separation of iodinated peptides. S. R. LERNER.* *VA Hosp., Houston and Baylor Univ.* (Physiol.)

2:15 **2488.** Metabolic effects of iodinated salicylates in normal, hypo- and hypermetabolic rats. C. L. GEMMILL AND K. M. BROWNING.* *Univ. of Virginia.* (Pharmacol.)

2:30 **2489.** Response of chick liver and plasma lipid to thyroid powder or propylthiouracil. J. D. EVANS, N. L. OLEKSYSHYN,* P. J. MIDDLETON* AND H. G. SCHWARTZ.* *Temple Univ.* (Physiol.)

2:45 **2490.** Regulation of coenzyme Q levels by various physiological treatments. R. E. BEYER, W. M. NOBLE* AND T. J. HIRSCHFELD.* *Tufts Univ.* (Physiol.)

3:00 **2491.** Phosphate excretion by parathyroidectomized dogs following intrarenal infusion of parathyroid hormone. P. F. HIRSCH,* G. L. MONTI AND P. L. MUNSON. *Harvard Sch. of Dent. Med. and Harvard Med. Sch.* (Pharmacol.)

3:15 **2492.** Prevention by stress of cutaneous calcinosis elicited by dihydrotachysterol. P. JEAN* AND H. SELYE. *Univ. of Montreal.* (Physiol.)

3:30 **2493.** Parathyroid hormone secretion rate determination by substitution techniques. B. N. PREMACHANDRA AND H. T. BLUMENTHAL. *Jewish Hosp., St. Louis.* (Pathol.)

Federation Office: Room 8, Convention Hall

Lost and Found

Federation Office, Room 8, Convention Hall

Future Annual Meetings

Federation Annual Meetings for the next three years will be held as follows: 1962, April 16–21, Atlantic City; 1963, April 15–20, Atlantic City; 1964, April 12–18, Chicago.

Physiology Society Sessions—Friday, 9:00 a.m.

240. SYMPOSIUM: Computer Technics in Physiology

FRI. A.M.—TRAYMORE, ROSE ROOM

Chairman: H. Warner

9:00 **2494.** An introduction to analog and digital computers. L. PETERSON. *Univ. of Pennsylvania.*

9:20 **2495.** A comparison of digital computer representations of metabolism in liquid phase and solid state. B. CHANCE. *Univ. of Pennsylvania.*

9:40 **2496.** Analog computer technics in the study of control mechanisms in the circulation. H. WARNER. *Univ. of Utah.*

10:00 **2497.** Simulation of nerve nets. B. FARLEY. *MIT.*

10:20 **2498.** Analog simulation of certain afferent and efferent nerve pathways. R. JONES. *Northwestern Univ.*

10:40 **2499.** Computer methods applicable to integrative brain function. R. BICKFORD. *Mayo Fndn.*

11:00 **2500.** From the viewpoint of a mathematician. R. BELLMAN. *Rand Corp.*

11:30 Round table discussion with audience participation.

241. Lipids; Fatty Acids

FRI. A.M.—CONVENTION HALL, ROOM B

Chairman: D. B. Zilversmit

9:00 **2501.** Coagulant and anticoagulant activity of aminophosphatides of fungi and microorganisms. D. L. TURNER,* M. J. SILVER,* R. R. HOLBURN* AND L. M. TOCANTINS. *Cardeza Fndn. and Jefferson Med. Coll.*

9:15 **2502.** Fate of cholesterol moiety of chylomicrons in rat. W. J. LOSSOW,* N. BROT* AND I. L. CHAIKOFF. *Univ. of California, Berkeley.*

9:30 **2503.** Gradient centrifugation studies on size distribution of chylomicrons. G. G. PINTER AND D. B. ZILVERSMIT. *Univ. of Tennessee.*

9:45 **2504.** Removal of intravenously injected fat from circulating blood. H. H. LEVEEN AND P. GIORDANO.* *VA Hosp., Brooklyn, and State Univ. of New York.*

10:00 **2505.** Effect of hormones on glycerol levels in blood. J. H. HAGEN.* *Univ. of Manitoba.*

10:15 **2506.** Mobilization of unesterified fatty acids from isolated rat adipose tissue by nerve stimulation, in vitro. J. W. CORRELL.* *Columbia Univ.*

10:30 **2507.** In vitro release of free fatty acids by adipose tissues in young and old rats. H. ALTSCHULER,* M. LIEBERSON* AND J. J. SPITZER. *Gerontol. Res. Inst. and Hahnemann Med. Coll.*

10:45 **2508.** Nature of lipogenic inhibitor induced by fasting. E. J. MASORO, E. PORTER* AND H. M. KORCHAK.* *Tufts Univ.*

242. Exercise; Energy Metabolism; Environment

FRI. A.M.—CONVENTION HALL, ROOM 13

Chairman: R. E. Johnson

9:00 **2509.** Endurance of various muscle groups in the same individuals. P. H. COHAN* AND P. V. KARPOVICH. *Springfield Coll., Massachusetts.*

9:15 **2510.** Quantitative changes in human muscular strength during isometric exercise. H. J. HISLOP.* *State Univ. of Iowa.*

9:30 **2511.** Energy expenditure of obese patients during the night and for 24-hour periods. E. R. BUSKIRK, R. H. THOMPSON* AND G. D. WHEDON. *Natl. Insts. of Health.*

9:45 **2512.** Basal metabolic rate of golden hamster. P. O. BRAMANTE* AND A. K. RAY.* *St. Louis Univ.*

10:00 **2513.** Oxygen deficit and repayment in mild exercise. L. LUKIN* AND H. RALSTON. *Ohio State Univ. and Univ. of California, San Francisco.*

10:15 **2514.** Adaptation to skindiving. K. E. SCHAEFER. *USN Med. Res. Lab., New London, Connecticut.*

10:30 **2515.** Summer-Fall variation in human urinary excretion of electrolytes, nitrogen fractions and 17-hydroxycorticosteroids. H. B. HALE, J. P. ELLIS, JR.* AND R. C. MCNEE.* *USAF Sch. Aviation Med., Brooks AFB.*

10:45 **2516.** Function and location of diffusional and electrical barrier in skin. J. K. BUETTNER. *Univ. of Washington.*

11:00 **2517.** Interaction of airions and aerosols. J. H. DOUGHERTY, K. E. SCHAEFER AND W. ANDERSON. *USN Med. Res. Lab., New London and Naval Res. Lab., Washington, D.C.*

243. Cardiac Output

FRI. A.M.—TRAYMORE, AMERICAN ROOM

Chairman: E. H. Wood

9:00 **2518.** Failure of blood transfusion to induce significant alteration in circulatory dynamics. H. P. MAUCK, JR., J. FREUND AND R. R. PORTER. *Med. Coll. of Virginia.*

9:15 **2519.** Krypton-85 in the measurement of cardiac output by single injection indicator-dilution technic. W. P. CORNELL,* E. BRAUNWALD AND E. C. BROCKENBROUGH.* *Natl. Insts. of Health.*

9:30 **2520.** Instrument for intravascular determination of oxygen saturation. Y. ENSON,* W. A. BRISCOE, M. L. POLANYI* AND A. COURNAND. *Columbia Univ.*

9:45 **2521.** Automatic dye-dilution cardiac output determination. J. T. HANSEN AND N. PACE. *Univ. of California, Berkeley.*

10:00 **2522.** Cardiovascular response to acute heat stress. R. J. MARSHALL, G. T. KOROXENIDIS* AND J. T. SHEPHERD. *Mayo Fndn. and Mayo Clinic.*

10:15 **2523.** Effect of increased pulse rate on circulatory dynamics in normal resting man. H. F. WARNER* AND D. H. LEWIS. *Philadelphia Gen. Hosp.*

10:30 **2524.** Circulatory adjustment in pearl divers. P. F. SCHOLANDER, H. T. HAMMEL, D. H. LEMESSURIER,* E. HEMMINGSEN* AND W. GAREY.* *Univ. of California, Univ. of Pennsylvania and Univ. of Adelaide, Australia.*

10:45 **2525.** Cardiac output, circulatory pressures and arterial oxygen saturation during forward acceleration. H. W. MARSHALL,* E. F. LINDBERG* AND W. F. SUTTERER.* *Mayo Clinic and Mayo Fndn.*

11:00 **2526.** Simultaneous observations of right and left ventricular stroke volumes in conscious dog. A. GUZ,* J. I. E. HOFFMAN * A. CHARLIER,* W. R. WIERICH,* L. ZANGER* AND J. BENKE.* *Univ. of California, San Francisco.*

11:15 **2527.** Balance between right and left ventricular output in healthy unanesthetized dogs. D. L. FRANKLIN,* R. L. VAN CITTERS* AND R. F. RUSHMER. *Univ. of Washington.*

11:30 **2528.** Influence of hyperventilation on cardiac output.

M. McGregor, R. E. Donevan,* O. Papp,* N. Anderson* and M. R. Becklake.* *Royal Victoria Hosp. and McGill Univ.*

244. Respiration Mechanics I

Fri. a.m.—Traymore, Traymore Room

Chairman: J. Mead

9:00 **2529.** Influence of esophageal elastance on V-P measurements of lungs. J. Milic-Emili,* E. Glauser* and J. Mead. *Harvard Sch. of Public Health.*

9:15 **2530.** Laryngeal resistance during breathing. C. C. Rattenborg,* M. L. Kain,* W. L. Logan* and D. A. Holaday. *Univ. of Chicago Sch. of Med.*

9:30 **2531.** Cinefluorography of upper airway during hyperextension. D. G. Greene and J. O. Elam.* *Univ. of Buffalo Med. Sch. and Roswell Park Memorial Inst.*

9:45 **2532.** Changes in anatomic dead space peculiar to positive pressure breathing. W. C. Kaufman.* *Aerospace Med. Lab., Wright-Patterson AFB.*

10:00 **2533.** Pulmonary arterial shunting in man during forward acceleration S. H. Steiner* and G. C. E. Mueller.* *Wright-Patterson AFB.*

10:15 **2534.** Changes in compliance during pressure breathing. T. Velasquez* and L. E. Farhi. *Univ. of Buffalo Sch. of Med.*

10:30 **2535.** Lung volume changes during pressure breathing. L. F. Johnson, Jr.* and J. Mead. *Harvard Sch. of Public Health.*

10:45 **2536.** Ventilatory mechanics during thoraco-abdominal compression. E. Y. Ting.* *Albert Einstein Coll. of Med.*

11:00 **2537.** Characterization of vagotomy-induced pulmonary edema through compliance and cross-circulation technics. R. H. Rech,* A. V. Ramalingam* and H. L. Borison. *Univ. of Utah Coll. of Med.*

11:15 **2538.** Effect of increased breathing frequency on inspiratory resistance in emphysema. J. Tyler* and E. Channin.* *Lemuel Shattuck Hosp. and Harvard Sch. of Public Health.*

11:30 **2539.** Volume-pressure relationships of lungs of fetal, liveborn and adult goats. M. E. Avery* and C. D. Cook.* *Harvard Sch. of Public Health and Children's Med. Ctr.*

245. Muscle Metabolism; Contraction

Fri. a.m.—Traymore, Belvedere Room

Chairman W. F. H. M. Mommaerts

9:00 **2540.** Molecular weight and size of myosin from mice with hereditary muscular dystrophy. H. Oppenheimer,* K. Barany,* H. Terry* and E. Forsyth.* *Inst. for Muscle Dis., New York.* (Nutr.)

9:15 **2541.** Effect of stimulation on phosphorylase levels in muscles of mice with hereditary muscular dystrophy. R. R. Rulon,* D. D. Schottelius* and B. A. Schottelius. *Univ. of Iowa.*

9:30 **2542.** Enzyme activities in dystrophic and denervated mouse muscle. M. W. McCaman.* *Inst. of Psychiatric Res., Indiana Univ.*

9:45 **2543.** Effects of steroids on survival of dystrophic mice. R. M. Dowben and P. Gordon.* *Northwestern Univ.*

10:00 **2544.** Effect of fasting on metabolism of glucose and free fatty acid by isolated rat heart. L. H. Opie,* J. R. Evans* and J. S. Shipp.* *Harvard Med. Sch. and Univ. of Florida.*

10:15 **2545.** Glycogen and phosphorylase distribution throughout walls of rabbit heart. L. A. Jedeikin.* *Albert Einstein Coll. of Med.*

10:30 **2546.** Metabolism of red and white muscle. C. H. Beatty, R. D. Peterson and R. M. Bocek.* *Univ. of Oregon and Oregon Primate Res. Ctr., Portland.*

10:45 **2547.** Potentiation of contraction by zinc. A. Isaacson* and A. Sandow. *Inst. for Muscle Dis., New York.*

11:00 **2548.** Effects of uncoupling agents on striated muscles. M. Brust. *Inst. for Muscle Dis., New York.*

11:15 **2549.** Epinephrine and latency of muscular contraction. H. Shapiro. *Woman's Med. Coll. of Pennsylvania.*

11:30 **2550.** Comparative effects of drugs on graded responses of insect muscle fibers. P. Belton* and H. Grundfest. *Columbia Univ.*

11:45 **2551.** Freeze-thaw contracture and excitation-contraction coupling. F. N. Briggs, R. King* and J. Barnaby.* *Tufts Univ. Sch. of Med.*

Physiology Society Sessions—Friday, 1:00 p.m.

246. Altitude; Space

Fri. p.m.—Convention Hall, Room 13

Chairman: D. H. K. Lee

1:00 **2552.** Criterion to assess effect of various factors on altitude tolerance. S. G. Ilk,* J. J. Seguin, B. Bhatia* and J. A. F. Stevenson. *Univ. of Western Ontario Med. Sch.*

1:15 **2553.** Hypoxia and fertility in adapted mice. B. Baird* and S. F. Cook. *Univ. of California, Berkeley.*

1:30 **2554.** Some biochemical changes in response to hypoxia. J. A. Green.* *Civil Aeromed. Res. Inst., Oklahoma City.*

1:45 **2555.** Relation of respiratory alkalosis and adrenal activity to hypokalemia in restrained and unrestrained dogs subjected to simulated high altitude. J. Q. Barry,* F. P. Ferguson, A. J. Gold* and D. C. Smith. *Univ. of Maryland Sch. of Med., Baltimore.*

2:00 **2556.** Antidiuretic response in rhesus monkey and dog induced by external positive pressure on tympanic membrane. F. A. Sunahara. *Def. Res. Med. Lab., Toronto.*

2:15 **2557.** Resonant frequencies of internal body structures. J. L. Nickerson, G. Nemhauser,* C. Gannon,* J. Greenman* and R. Satzman.* *Chicago Med. Sch.*

2:30 **2558.** Tolerance of mice to impact following free fall A. J. Gold,* H. E. Hance,* M. Kornhauser* and R. W Lawton. *General Electric Missile and Space Vehicle Dept.*

247. O_2-CO_2 Transport; Blood Gases

FRI. P.M.—TRAYMORE, AMERICAN ROOM

Chairman: R. H. Kellogg

1:00 **2559.** Buffering of carbon dioxide with sodium carbonate during apneic oxygenation. D. HASSAM,* G. G. NAHAS, M. H. HOLMDAHL* AND W. M. MANGER. *Columbia Univ.*

1:15 **2560.** Gas exchange during simulated breath-hold dives. E. H. LANPHIER AND H. RAHN. *Univ. of Buffalo.*

1:30 **2561.** Measurement of pulmonary capillary volume with carbon dioxide. G. POWER,* R. W. HYDE,* W. H. LAWSON, JR.* AND R. E. FORSTER. *Univ. of Pennsylvania Grad. Sch. of Med.*

1:45 **2562.** Effect of exercise on distribution of ventilation and blood perfusion to lung in emphysema. G. EMMANUEL,* F. MORENO,* G. TORRES* AND H. A. LYONS.* *State Univ. of New York.*

2:00 **2563.** Continuous in vivo recording of arterial blood P_{O_2} using needle electrode. S. I. SAID,* C. M. BANERJEE,* R. K. DAVIS* AND J. L. CROSIER.* *Med. Coll. of Virginia.*

2:15 **2564.** Recovery from acute hyperventilation. J. A. LIPSKY,* J. F. TOMASHEFSKI AND E. T. CARTER. *Ohio State Univ.*

2:30 **2565.** Ventilatory, hemodynamic and renal response to intravenous infusion of CO_2, with observations on effects of CO_2 buffer. R. A. BARATZ,* A. N. WELTER* AND L. H. HAMILTON. *Marquette Univ. Sch. of Med. and Wood VA Hosp., Milwaukee.*

2:45 **2566.** Gaseous exchange following pulmonary embolism in dogs. I. BRUDERMAN,* M. STEIN* AND S. WESSLER. *Beth Israel Hosp. and Harvard Med. Sch.*

3:00 **2567.** Gas chromatographic method of analyzing body fluids such as whole blood for mixtures of inert and chemically reactive gases. R. H. WILSON,* B. E. JAY* AND C. B. CHAPMAN. *Univ. of Texas Southwestern Med. Sch., Dallas.*

3:15 **2568.** Determination of dissolved nitrogen in blood and biological fluids. A. W. T. EDWARDS* AND L. E. FARHI. *Univ. of Buffalo.*

248. Respiration Mechanics II

FRI. P.M.—TRAYMORE, TRAYMORE ROOM

Chairman: J. A. Clements

1:00 **2569.** Effect of aging on flow resistance to collateral ventilation. H. B. MARTIN. *Harvard Sch. of Public Health.*

1:15 **2570.** Maximum breathing capacity prediction from velocity-volume ($\dot{V}$-V) loop. R. G. BARTLETT, JR., N. E. PHILLIPS* AND G. WOLSKI.* *U.S. Naval Sch. of Aviation Med., Pensacola, Florida.*

1:30 **2571.** Maximum breathing capacity during negative pressure. H. A. LYONS* AND R. G. DOLCE.* *State Univ. of New York and U.S. Naval Hosp., St. Albans, New York.*

1:45 **2572.** Studies of regional pulmonary ventilation and perfusion using Xenon^{133}. W. C. BALL, JR.,* P. B. STEWART,* L. S. NEWSHAM* AND D. V. BATES. *Royal Victoria Hosp. and McGill Univ., Montreal.*

2:00 **2573.** Effect of dead space mixing and asynchronous ventilation on measurement of uneven ventilation. R. E. NYE, JR.* *Dartmouth Med. Sch.*

2:15 **2574.** Effect of submicronic aluminum dust inhalation on thoracic lymphatic and nonlymphatic flow in unanesthetized dogs. H. STONE* AND E. ROBILLARD. *Univ. of Montreal.*

2:30 **2575.** Characteristics of respiratory flow and pressure in new born infants. U. C. LUFT, R. F. GODDARD* AND E. H. ROORBACH.* *Lovelace Fndn. and Clinic, Albuquerque.*

2:45 **2576.** Comparison of surface characteristics of rat and frog lung extracts. D. A. MILLER AND S. BONDURANT. *Indiana Univ. Med. Ctr.*

3:00 **2577.** Factors affecting surface tension of lung extracts. W. TOOLEY,* R. GARDNER,* N. THUNG* AND T. FINLEY.* *Univ. of California, San Francisco*

3:15 **2578.** Small animal body plethysmograph. S. F. GOTTLIEB* AND R. V. JAGODZINSKI.* *Linde Co., Tonawanda, New York.*

249. Behavior; Visceral Reflexes

FRI. P.M.—TRAYMORE, ROSE ROOM

Chairman: W. B. Youmans

1:00 **2579.** Animal behavior rating scale for quantification of savage behavior in cats. E. I. BURDOCK,* M. GLUSMAN* AND J. ZENER.* *New York State Dept. of Mental Hygiene and Columbia Univ.*

1:15 **2580.** Dien-mesencephalic loci involved in penile erection and seminal discharge. P. D. MACLEAN,* S. DUA* AND R. H. DENNISTON. *Natl. Insts. of Health.*

1:30 **2581.** Effects of amygdalectomy on sexual behavior and reproductive capacity in male rat. N. B. SCHWARTZ AND A. KLING.* *Michael Reese Hosp.*

1:45 **2582.** Effect of amygdalectomy on feeding in infant and adult animals. A. KLING* AND N. B. SCHWARTZ.* *Illinois State Psychiat. Inst. and Michael Reese Hosp.*

2:00 **2583.** Alimentary responses evoked from extra-hypothalamic structures in macaca mulatta. B. W. ROBINSON* AND M. MISHKIN.* *Natl. Insts. of Health.*

2:15 **2584.** Role of amygdaloid complex in regulation of antidiuretic hormone. J. N. HAYWARD* AND W. K. SMITH. *Univ. of Rochester.*

2:30 **2585.** Inhibitory effects of amygdala on food intake and conditioning. E. FONBERG* AND J. M. R. DELGADO. *Yale Univ.*

2:45 **2586.** Chronic stimulation of amygdaloid complex. R. H. WURTZ* AND J. OLDS. *Univ. of Michigan.*

3:00 **2587.** Localization of mechanism for vocalization in hypothalamus and its descending pathway in brain stem of cat. T. KANAI* AND S. C. WANG. *Columbia Univ.*

3:15 **2588.** "Cardiovascular" neurones in brain stem of cat. G. C. SALMOIRAGHI.* *Natl. Insts. of Health.*

3:30 **2589.** Central control of visceral afferents. R. SIMINOFF.* *Miles Labs.*

3:45 **2590.** Microelectrode study of galvanic skin response. R. EDELBERG. *Baylor Univ. and Houston State Psychiat. Inst.*

250. Enzymes

FRI. P.M.—TRAYMORE, BELVEDERE ROOM

Chairman: C. D. Kochakian

1:00 **2591.** Oxidase activity in cerebellar cortex of mice demonstrated by NADI reaction. Z. MENSCHIK AND J. A. D'ELIA.* *Georgetown Univ.*

1:15 **2592.** Inhibition of mitochondrial monoamine oxidase by phenantroline and phenylcyclopropylamine. L. BARBATO* AND L. G. ABOOD. *Univ. of Illinois.*

1:30 **2593.** Action of British anti lewisite on hepatic succinoxidase and other sulfhydryl-dependent enzyme systems. S. BAKSHY* AND L. L. GERSHBEIN.* *Illinois Inst. of Technology.*

1:45 **2594.** Effect of exercise on succinic dehydrogenase feeding response. R. R. NIELSON* AND H. M. KLITGAARD. *Marquette Univ.*

2:00 **2595.** Endocrine participation in adaptive increase in HMP dehydrogenase activity of rat liver. H. M. TEPPERMAN,

J. TEPPERMAN, J. DEWITT* AND A. BRANCH.* *State Univ. of New York.*

2:15 **2596.** Tolerance to anoxia and development of cerebral succinic dehydrogenase and cytochrome oxidase activities in rabbit. S. CASSIN* AND C. S. HERRON, JR.* *Univ. of Florida.*

2:30 **2597.** Carbonic anhydrase studies employing an isotopic procedure. D. V. TAPPAN. *USN Med. Res. Lab., New London.*

2:45 **2598.** Modification of erythrocyte carbonic anhydrase activity. S. KORMAN* AND M. KARA.* *Montefiore Hosp., New York.*

3:00 **2599.** Antihyaluronidase activity as modified by magnesium and citrate and menstrual cycle. J. P. BAUMBERGER, N. F. GOLDSMITH,* H. C. LEONG* AND J. FICARRA.* *Stanford Univ.*

3:15 **2600.** Glycogenolysis and phosphorylase activation by glucagon and anoxia in perfused rat heart. M. CORNBLATH,* H. E. MORGAN* AND P. J. RANDLE. *Vanderbilt Univ., Cambridge Univ., England, and Michael Reese Hosp.*

3:30 **2601.** Induced enzyme synthesis in cell cultures of embryonic R. Pipiens. A. B. KOSTELLOW.* *Albert Einstein Coll. of Med.*

Biochemistry Society Sessions—Friday, 9:00 a.m.

251. Genetics II

FRI. A.M.—CONVENTION HALL, BALLROOM

Chairman: E. Adams

9:00 **2602.** Purification of histidinol dehydrogenase from Salmonella. J. C. LOPER* AND E. ADAMS. *St. Louis Univ.*

9:15 **2603.** Peptide pattern differences in mutationally altered A proteins. D. HELINSKI* AND C. YANOFSKY. *Stanford Univ.*

9:30 **2604.** Turnover of β-galactosidase. BARBARA E. WRIGHT AND G. MCNEILL.* *Natl. Insts. of Health.*

9:45 **2605.** RNA metabolism and beta-galactosidase induction in nongrowing E. coli. J. D. LOERCH* AND J. L. FAIRLEY. *Michigan State Univ.*

10:00 **2606.** Carbon source repression of β-galactosidase in E. coli. DONALD D. BROWN* AND JACQUES MONOD.* *Inst. Pasteur.*

10:15 **2607.** Production of β-galactosidase following transduction. HELEN R. REVEL* AND S. E. LURIA. *MIT.* (Immunol.)

10:30 **2608.** Effect to T2 infection on the nucleic acid metabolism of E. coli. PRISCILLA J. ORTIZ* AND J. THOMAS AUGUST.* *New York Univ.*

10:45 **2609.** Enzyme and nucleic acid synthesis after infection with UV-irradiated T2. J. S. WIBERG* AND M. L. DIRKSEN.* *MIT.*

11:00 **2610.** Enzymes in normal and bacteriophage-infected E. coli. MAURICE J. BESSMAN, LEONARD J. BELLO* AND MARY JANE VAN BIBBER.* *Johns Hopkins Univ.*

11:15 **2611.** Glucosylation of DNA by enzymes from bacteriophage-infected Escherichia coli. STEVEN B. ZIMMERMAN* AND S. R. KORNBERG. *Stanford Univ.*

11:30 **2612.** Identification of glucose as a phage-determined component of Salmonella polysaccharides. P. W. ROBBINS AND T. UCHIDA.* *MIT.*

252. Porphyrins and Hemeproteins

FRI. A.M.—CONVENTION HALL, ROOM H

Chairman: R. L. Hill

9:00 **2613.** Substrate specificity of the iron-protoporphyrin chelating enzyme. ROBERT F. LABBE AND NANCY HUBBARD.* *Univ. of Washington.*

9:15 **2614.** Mitochondrial coproporphyrinogen oxidase and the formation of protoporphyrin. S. GRANICK AND S. SANO. *Rockefeller Inst.*

9:30 **2615.** Spectrophotometric characterization of modified forms of normal human acidic methemoglobin. B. F. CAMERON* AND P. GEORGE. *Univ. of Pennsylvania.*

9:45 **2616.** Partial structure of the α-chain of human hemoglobin. W. KONIGSBERG* AND R. J. HILL.* *Rockefeller Inst.*

10:00 **2617.** Optical rotatory dispersion and magneto-optical rotatory dispersion studies of hemoglobin. MAKIO MURAYAMA. *Natl. Insts. of Health.*

10:15 **2618.** Some properties of hemoglobin H. REINHOLD BENESCH, HELEN M. RANNEY* AND RUTH E. BENESCH. *Columbia Univ. and Albert Einstein Coll.*

10:30 **2619.** Identification of the C-terminal peptide from a trypsin digest of the γ chain of hemoglobin. M. A. NAUGHTON.* *MIT.*

10:45 **2620.** Denaturation of hemoglobin H in aged erythrocytes: relation to enzyme and GSH changes. D. A. RIGAS AND R. D. KOLER.* *Univ. of Oregon.*

11:00 **2621.** Chemistry of hemoglobin norfolk, a rare variant of human hemoglobin. CORRADO BAGLIONI. *MIT.* (Physiol.)

11:15 **2622.** An oxygen-combining heme-protein in plasma. JONATHAN B. WITTENBERG. *Albert Einstein Coll.*

11:30 **2623.** Properties of tuna and other myoglobins. W. DUANE BROWN. *Univ. of California.*

253. Amino Acid Metabolism V

FRI. A.M.—CONVENTION HALL, STAGE

Chairman: A. Meister

9:00 **2624.** Repression of glutaminase I in the rat retina by administration of sodium L-glutamate. JEROME K. FREEDMAN* AND ALBERT M. POTTS. *Univ. of Chicago.*

9:15 **2625.** Distribution of glutamine synthetase. CHUNG WU.* *Univ. of Michigan.*

9:30 **2626.** Pathways of glutamic acid metabolism in rat cerebral cortex. O. Z. SELLINGER,* E. B. CHAIN,* F. POCEHIARI* AND R. CATANZARO.* *Tulane Univ. and Istituto Superiore di Sanita.*

9:45 **2627.** Carbon dioxide fixation in brain in vivo. S. BERL,* D. D. CLARKE,* G. TAKAGAKI,* D. P. PURPURA* AND H. WAELSCH. *New York State Psychiatric Inst. and Columbia Univ.*

10:00 **2628.** Mechanism of glutamate activation in glutamine synthesis and γ-glutamyl transfer. ALTON MEISTER, P. R. KRISHNASWAMY,* VAIRA PAMILJANS* AND GEORGIA DUMVILLE.* *Tufts Univ.*

10:15 **2629.** Substrate requirements of transglutaminase. A. NEIDLE* AND G. ACS.* *New York State Psychiatric Inst. and Columbia Univ.*

10:30 **2630.** Enzymatic utilization of L-glutamine for the synthesis of citrulline in basidiomycetes. BRUCE LEVENBERG.* *Univ. of Michigan.*

10:45 **2631.** Biosynthesis of asparagine. ALI AL DAWODY* AND J. E. VARNER. *Ohio State Univ.*

11:00 **2632.** Aspartyl semialdehyde and diaminopimelic acid synthesis. YASUMI YUGARI* AND CHARLES GILVARG. *New York Univ.*

11:15 **2633.** Cleavage of γ-hydroxyglutamic acid by a rat liver enzyme. EUGENE E. DEKKER* AND UMADAS MAITRA.* *Univ. of Michigan.*

11:30 **2634.** γ-Aminobutyrate metabolism in Clostridium aminobutyricum. JOHN HARDMAN.* *Natl. Heart Inst.*

254. Oxidative Enzymes V

FRI. A.M.—CONVENTION HALL, ROOM F

Chairman: A. Nason

9:00 **2635.** Role of lipoic acid in lactate fermentation by Butyribacterium rettgeri. CHARLES WITTENBERGER.* *Natl. Heart Inst.*

9:15 **2636.** Role of microsomes in decline of oxidation in vitamin E-deficient rat liver homogenates. L. M. CORWIN. *Natl. Insts. of Health.*

9:30 **2637.** Lipid composition of highly purified enzyme preparations derived from beef heart mitochondria. SIDNEY FLEISCHER,* GERALD BRIERLEY* AND HERMAN KLOUWEN.* *Univ. of Wisconsin.*

9:45 **2638.** Function of essential fatty acids in mitochondria. A. L. TAPPEL AND T. RICHARDSON.* *Univ. of California and Bureau of Commercial Fisheries.*

10:00 **2639.** Reconstitution of the succinic oxidase system. TSOO E. KING. *Oregon State Coll.*

10:15 **2640.** Inhibition of oxidation of the citric acid cycle intermediates by alloxan. EZZAT S. YOUNATHAN.* *Univ. of Arkansas Med. Ctr.*

10:30 **2641.** Malate and isocitrate as precursors of TPNH in reductive biosyntheses. JOHN M. LOWENSTEIN. *Brandeis Univ.*

10:45 **2642.** Measurement of pyridine nucleotides by enzymatic cycling. JANET V. PASSONNEAU* AND OLIVER H. LOWRY. *Washington Univ. Sch. of Med.*

11:00 **2643.** Cytoplasmic-mitochondrial interrelationships in the oxidation of extramitochondrial DPNH in muscle. BERTRAM SACKTOR AND ARTHUR R. DICK.* *Army Chemical Ctr., Maryland.*

11:15 **2644.** Fluorescence of reduced pyridine nucleotide (PNH) in rat liver mitochondria. YORAM AVI-DOR* AND JOHN M. OLSON.* *Brandeis Univ.*

11:30 **2645.** Morphological-biochemical interrelationships of brain mitochondria. R. TANAKA* AND L. G. ABOOD. *Univ. of Illinois.* (Physiol.)

255. Carbohydrate Metabolism VIII

FRI. A.M.—CONVENTION HALL, ROOM G

Chairman: B. L. Horecker

9:00 **2646.** Effects of sorbitol on growth and α-ketoacid metabolism in thiamine-deficient rats. C. J. GUBLER. *Brigham Young Univ.*

9:15 **2647.** Synthesis of ribose during two stages of growth and differentiation of tragopogon root callus. LILA ABRAHAMSON.* *Univ. of Michigan.*

9:30 **2648.** Comparative carbohydrate catabolism in acetobacter species. CHIH H. WANG AND SOLVEIG H. BJERRE.* *Oregon State Coll.*

9:45 **2649.** Pathways of carbohydrate metabolism in candida. M. CHAKRAVORTY,* M. BACILA,* L. A. VEIGA* AND B. L. HORECKER. *New York Univ. Sch. of Med. and Inst. de Bioquimica da Univ. do Parana, Brasil.*

10:00 **2650.** Purification and properties of L-xylulokinase and L-xylulose-5-phosphate 3-epimerase from Aerobacter aerogenes. R. L. ANDERSON,* L. B. JACOBS* AND W. A. WOOD. *Michigan State Univ.*

10:15 **2651.** Enzymic hydrolysis and transfer reactions of phosphoramidates. ROBERTS A. SMITH* AND ATSUKO FUJIMOTO.* *UCLA*

10:30 **2652.** Determination of hexokinase activity in brain. E. L. BENNETT, J. B. DRORI,* D. KRECH,* M. R. ROSENZWEIG,* M. DIAMOND* AND S. ABRAHAM. *Univ. of California, Berkeley and Kaiser Fndn. Hosp.*

10:45 **2653.** Galactose oxidase of Polyporus circinatus. C. ASENSIO* AND D. A. F. DO AMARAL.* *New York Univ. Sch. of Med.* (Immunol.)

11:00 **2654.** A complex polysaccharide from baker's yeast. JACQUES BOURDILLON. *New York State Dept. of Health.*

11:15 **2655.** Effects of gamma radiation on cellulose. RUSSELL A. VAN DYKE,* BERT M. TOLBERT AND THEODORE E. FRIEDEMANN. *Univ. of Colorado.*

11:30 **2656.** Identification and determination of pyruvate, a component in a bacterial polysaccharide. J. H. SLONEKER* AND D. G. ORENTAS.* *Northern Regional Res. Lab.*

11:45 **2657.** Preparation of a chemically modified nontoxic E. coli endotoxin of high immunogenic potency. HANS NOLL AND A. I. BRAUDE.* *Univ. of Pittsburgh Sch. of Med.*

12:00 **2658.** General method for isolation of lipopolysaccharide endotoxins: lipid and polysaccharide moieties. HENRY TAUBER AND HAROLD RUSSELL. *Univ. of North Carolina Sch. of Public Health.*

256. Photosynthesis

FRI. A.M.—AMBASSADOR, RENAISSANCE ROOM

Chairman: E. Racker

9:00 **2659.** Withdrawn.

9:15 **2660.** Photoassimilation of CO_2 and acetate by photosynthetic bacteria into protein and other insoluble cell constituents. DANIEL I. ARNON, V. S. R. DAS* AND JOHN D. ANDERSON.* *Univ. of California.*

9:30 **2661.** Dark fixation of CO_2 by marine plants. GOVIND JOSHI,* THOMAS DOLAN,* ROBERT GEE* AND PAUL SALTMAN. *Univ. of Southern California Sch. of Med.*

9:45 **2662.** Dark incorporation of $C^{14}O_2$, acetate-1-C^{14} and acetate-2-C^{14} into starch glucose of Chlorella pyrenoidosa. PAUL K. KINDEL* AND MARTIN GIBBS. *Cornell Univ.*

10:00 **2663.** Glycolate formation from fructose-6-P by cell-free preparations. J. W. BRADBEER* AND EFRAIM RACKER. *Public Health Res. Inst.*

10:15 **2664.** Phosphoglycolic acid phosphatase. K. E. RICHARDSON* AND N. E. TOLBERT. *Michigan State Univ.*

10:30 **2665.** Photophosphorylation by Rhodospirillum rubrum chromatophores. T. HORIO,* M. D. KAMEN AND S. TANIGUCHI.* *Brandeis Univ.*

10:45 **2666.** Photophosphorylation by intermittent light. MITSUO NISHIMURA.* *Univ. of Pennsylvania.*

11:00 **2667.** Photophosphorylation catalyzed by chloroplast fragments prepared by sonic oscillation. A. R. SCHULZ.* *Oklahoma State Univ.*

11:15 **2668.** Kinetics of the photochemical reduction of the plant quinone Q-255. NORMAN I. BISHOP.* *Florida State Univ.*

11:30 **2669.** Catalysis of photophosphorylation by allagochrome. A. R. KRALL AND HELEN H. HABERMANN. *Univ. of Miami Sch. of Med. and Goucher Coll.*

257. Steroid Metabolism III

FRI. A.M.—AMBASSADOR, VENETIAN ROOM

Chairman: S. Lieberman

9:00 **2670.** Effect of inhibitors of cholesterol biosynthesis on the growth of tetrahymena. W. J. JOHNSON* AND R. JASMIN.* *Frank W. Horner, Ltd.*

9:15 **2671.** Conversion of squalene to sterol by rat skin slices. J. L. GAYLOR.* *Cornell Univ.*

9:30 **2672.** Participation of sulfhydryl enzyme in the conversion of squalene to sterol with rat liver enzymes. DEWITT S. GOODMAN.* *Natl. Insts. of Health.*

9:45 **2673.** Biosynthesis of phytoene by cell-free preparations of carrot. DAVID G. ANDERSON* AND JOHN W. PORTER. *VA Hosp. and Univ. of Wisconsin.*

10:00 **2674.** $\Delta^{7,24}$-cholestadien-3β-ol, a probable intermediate in cholesterol synthesis. IVAN D. FRANTZ, JR. AND MARY L. MOBBERLEY.* *Univ. of Minnesota.*

10:15 **2675.** Effects of taurine and glutathione on cholesterol biosynthesis. ELIAHU GILON,* PAUL S. ROHEIM,* CAROL KLEIN* AND HOWARD A. EDER. *Albert Einstein Coll.*

10:30 **2676.** Conversion of Δ^7-cholestenol to cholesterol. G. J. SCHROEPFER, JR.* *Univ. of Minnesota.*

10:45 **2677.** Enzymatic reduction of the Δ^7 bond of 7-dehydrocholesterol. A. A. KANDUTSCH. *Roscoe B. Jackson Mem. Lab.*

11:00 **2678.** Oxidative cleavage of the side chains of various simple C_{27}-steroids by rat liver mitochondria. EDMUND STEVENSON* AND EZRA STAPLE. *Univ. of Pennsylvania.*

11:15 **2679.** Catabolism of 3a, 7a, 12a-trihydroxycoprostane (TCH) by rat liver mitochondria. HELGA M. SULD,* EZRA STAPLE AND SAMUEL GURIN. *Univ. of Pennsylvania.*

11:30 **2680.** Metabolism of cholanic-24-^{14}C acid. LESTER W. WELLS,* P. D. RAY* AND S. A. THAYER. *St. Louis Univ.*

11:45 **2681.** Metabolism of chenodeoxycholic-24-^{14}C acid in the chicken. JAMES W. AHLBERG,* VINCENT A. ZIBOH,* ROBERT C. SONDERS* AND S. L. HSIA. *St. Louis Univ.*

258. Specialized Tissues

FRI. A.M.—AMBASSADOR, SURF ROOM

Chairman: C. G. Mackenzie

9:00 **2682.** Effect of proteolytic autolysis on analytical values for histone and residual protein in isolated nuclei. ROBERTO UMANA AND ALEXANDER L. DOUNCE. *Univ. of Rochester.*

9:15 **2683.** Localization of β-glycosidases in nerve cell bodies. HILDE E. HIRSCH* AND ELI ROBINS. *Washington Univ.*

9:30 **2684.** Composition of Sarcina lutea protoplast fractions. JOHN W. BROWN.* *Univ. of Louisville.*

9:45 **2685.** Some properties of beef pancreas ribosomes. J. T. MADISON* AND S. R. DICKMAN. *Univ. of Utah.*

10:00 **2686.** Sub-fractionation of rat liver microsomes. JOEL A. ROTHSCHILD.* *Rockefeller Inst.*

10:15 **2687.** Isolation of a new particulate fraction from mammalian cells. C. G. MACKENZIE, O. K. REISS AND J. B. MACKENZIE. *Univ. of Colorado.*

10:30 **2688.** Dynamic turnover of rat liver mitochondria. M. J. FLETCHER* AND D. R. SANADI. *Natl. Heart Inst. and Baltimore City Hosps.*

10:45 **2689.** Action of erythropoietine (ESF). SIEGMUND FISCHER* AND IRVING M. LONDON. *Albert Einstein Coll.*

11:00 **2690.** Relationship between glycolysis and the nucleotide pattern in incubated human blood. CHARLES BISHOP.* *Univ. of Buffalo.*

11:15 **2691.** Effects of various chemicals on the metabolism of phosphate compounds in erythrocytes. GORDON C. MILLS. *Univ. of Texas.*

11:30 **2692.** Mechanism of cellular destruction caused by freezing. HENRY A. SLOVITER. *Univ. of Pennsylvania.*

11:45 **2693.** Action of electroshock upon the nucleotides of rat brain. FREDERICK N. MINARD* AND RAYMOND V. DAVIS.* *Abbott Labs.*

Biochemistry Society Sessions—Friday, 1:00 p.m.

259. SYMPOSIUM: Regulation of Metabolism

FRI. P.M.—CONVENTION HALL, ROOM H

Chairman: P. Handler

1:00 **2694.** Introduction. P. HANDLER. *Duke Univ.*

1:10 **2695.** Regulation by enzyme activation and deactivation. T. W. RALL AND E. P. SUTHERLAND. *Western Reserve Univ.*

1:45 **2696.** Regulation of biosynthetic pathways. B. MAGASANIK. *MIT.*

2:20 **2697.** Regulation of energy-yielding pathways. E. RACKER. *Public Health Res. Inst. of New York.*

3:00 **2698.** A digital computer representation of metabolic control of "mass law" systems. B. CHANCE. *Univ. of Pennsylvania.*

3:35 **2699.** Stability of cellular metabolism. H. J. MOROWITZ, H. QUASTLER, W. MATTHYSSE AND C. A. HUTCHISON. *Yale Univ., Brookhaven Natl. Lab., Princeton Univ. and California Inst. of Technology.*

Pharmacology Society Sessions—Friday, 9:00 a.m.

260. Autonomic Pharmacology IV

FRI. A.M.—DENNIS, BORTON HALL

Chairman: K. I. Melville

9:00 **2700.** Influence of 5-HT antagonists on the ganglionic stimulant action of 5-HT and DMPP. ELLIOT H. BINDLER* AND LASZLO GYERMEK. *Geigy Res. Labs.*

9:15 **2701.** Propulsive forces generated by tracheal cilia. R. E. GOSSELIN AND C. S. EYTEL.* *Dartmouth Med. Sch.*

9:30 **2702.** Stimulation of dopamine β-oxidase by TM10 and related compounds. PAUL HAGEN AND E. ZEBROWSKI.* *Univ. of Manitoba.*

9:45 **2703.** Sensitive assay of monoamine oxidase activity; application to sympathetic ganglia and heart. WALTER LOVENBERG,* ROBERT LEVINE* AND ALBERT SJOERDSMA. *Natl. Heart Inst.*

10:00 **2704.** Dichloroisoproterenol and blood glucose in several species. MARY A. ROOT. *Lilly Res. Labs.*

10:15 **2705.** DCI inhibition of hyperglycemia and FFA release. WILLIAM C. LOVE* AND JAMES ASHMORE. *Univ. of Indiana.* (Biochem.)

10:30 **2706.** Possible mechanism of action of nicotine on coagulation time in vitro. JASBIR SINGH* AND Y. T. OESTER. *Loyola Univ.*

10:45 **2707.** Hyperglycemic activity of 2,2′-bipyridine. EMILY MOREY* AND ALEXANDER D. KENNY. *West Virginia Univ. Med. Ctr.*

11:00 **2708.** Canine blood sugar and lactic acid responses to adrenergic agents after adrenergic blockade. R. S. MCCUTCHEON.* *Oregon State Coll.*

11:15 **2709.** Hyperglycemic activity of sympathomimetic drugs in adrenalectomized rats. WILLIAM W. FLEMING* AND ALEXANDER D. KENNY. *West Virginia Univ. Med. Ctr.*

261. Blood: Metabolism and Transport

FRI. A.M.—DENNIS, CRYSTAL BALLROOM

Chairman: R. K. Richards

9:00 **2710.** Evidence for "pumpstoffe" in human red cells. J. B. KAHN, JR. *Univ. of Cincinnati.*

9:15 **2711.** Hydrogen peroxide detoxification and drug-induced hemolytic anemia. GERALD COHEN* AND PAUL HOCHSTEIN.* *Columbia Univ.*

9:30 **2712.** Action of autoxidizable compounds in inducing erythrocyte hemolysis. PAUL HOCHSTEIN* AND GERALD COHEN.* *Columbia Univ.*

9:45 **2713.** Erythropoietin production by the in situ perfused kidney. JAMES W. FISHER* AND BEN J. BIRDWELL.* *Univ. of Tennessee.*

10:00 **2714.** Origin and identity of L. E. cells. VAUGHAN P. SIMMONS.* *Marquette Univ.*

10:15 **2715.** Tumor immunity: effect of induced regression by formalin and antitumor serum. NORMAN MOLOMUT,* ANGELO DIMARTINO,* GRACE BURKE* AND SHEILA MAGARIK.* *Waldemar Med. Res. Fndn.*

10:30 **2716.** Production of a rabbit antiserum to human leukemia. SOLOMON GARB, ARTHUR A. STEIN* AND GEORGE SIMS.* *Albany Med. Coll.*

10:45 **2717.** Effect of experimental graded hypovolemia on the coagulation mechanism. A. W. ULIN,* E. EHRLICH* AND S. GOLLUB * *Hahnemann Med. Coll. and Hosp.*

11:00 **2718.** Potentiation of anticoagulant activity of phosphatidylserine by trace amounts of heparin. M. J. SILVER,* D. L. TURNER,* R. R. HOLBURN,* I. RODALEWICZ* AND L. M. TOCANTINS.* *Cardeza Fndn.*

11:15 **2719.** Absorption of oral heparin and sulfopolyglucin. EMANUEL WINDSOR* AND GEORG CRONHEIM. *Riker Labs.*

11:30 **2720.** Hepatic uptake of Co^{58}-5,6-dimethylbenzimidazolylcobamide coenzyme in humans. DUK HO LEE* AND GEORGE B. JERZY GLASS. *New York Med. Coll.*

262. Lipids and Lipid Metabolism

FRI. A.M.—DENNIS, ST. DENIS ROOM

Chairman: H. M. Maling

9:00 **2721.** Metabolic effects of phentolamine compared to epinephrine. C. R. BOSHART,* L. WILL,* A. PIRRE* AND I. RINGLER. *Lederle Labs.*

9:15 **2722.** Acute ethanol intoxication and lipid mobilization. E. E. ELKO* AND N. R. DI LUZIO.* *Univ. of Tennessee.*

9:30 **2723.** Blood alcohol disappearance rate after the administration of i.v. glucagon. DELBERT NELSON* AND CLAYTON E. JENSEN.* *Univ. of North Dakota.*

9:45 **2724.** Role of pituitary-adrenal system in derangement of fat mobilization produced by ethanol. R. P. MAICKEL* AND R. PAOLETTI.* *Natl. Insts. of Health.*

10:00 **2725.** Incorporation of palmitate-1-C^{14} into triglycerides and phospholipids by cell-free homogenates of livers from control and ethanol-treated rats. M. WAKABAYASHI,* M. G. HORNING,* H. M. MALING AND B. B. BRODIE. *Natl. Insts. of Health.*

10:15 **2726.** Decreased hepatic release of triglycerides in CCl_4-treated rats. ARTHUR FRANK,* M. G. HORNING* AND H. M. MALING. *Natl. Insts. of Health.*

10:30 **2727.** A method for rapid lipoprotein paper electrophoresis. M. MARCUS,* S. I. KLEINBERG* AND D. H. SHERBER.* *Fordham Hosp.*

10:45 **2728.** Transport of lipids by the isolated perfused rat liver. MURRAY HEIMBERG,* IRA WEINSTEIN,* HOWARD KLAUSNER* AND M. L. WATKINS.* *Vanderbilt Univ.*

263. Gastrointestinal Pharmacology

FRI. A.M.—DENNIS, GARDEN LOUNGE

Chairman: R. P. Walton

9:00 **2729.** Effects of 5-HT, iproniazid and reserpine on submaxillary salivation. LAWRENCE M. PETRUCELLI,* PETER H. BULLE AND MAHMOUD OSKOUI.* *Georgetown Univ.*

9:15 **2730.** Effect of parasympathomimetic stimulation on the metabolism of phosphatidopeptide in salivary gland. H. BURFORD* AND C. G. HUGGINS. *Kansas Univ. Med. Sch.*

9:30 **2731.** In vitro circular and longitudinal muscle activity differences in frog stomach. MARTIN W. WILLIAMS. *Univ. of Vermont.*

9:45 **2732.** Effect of solute concentration on terramycin absorption. C. F. GERBER,* H. F. HAMMER* AND O. KLIOZE.* *Chas. Pfizer.*

10:00 **2733.** Effect of dosage form upon the gastrointestinal absorption rate of salicylates. GERHARD LEVY,* R. H. GUMTOW* AND J. M. RUTOWSKI.* *Univ. of Buffalo.*

10:15 **2734.** Intestinal absorption of l-tyrosine derivatives. K. C. HUANG. *Univ. of Louisville.*

10:30 **2735.** Effect of drug on gastric ulcers produced by the administration of polymyxin B. O. M. MORENO* AND D. A. BRODIE. *Merck Inst. for Therap. Res.*

10:45 **2736.** A method for study of intragastric focal pH. JOSEPH GAMBESCIA,* VINCENT DESIDERIO* AND JAIME KRAWIEC.* *Hahnemann Med. Coll. & Hosp.*

11:00 **2737.** Priscoline stimulation of gastric secretion. EUGENE D. JACOBSON.* *U.S. Army Med. Res. Lab.*

11:15 **2738.** Antacid properties of a new antacid, monalium hydrate. JAIME KRAWIEC,* VINCENT DESIDERIO* AND JOSEPH GAMBESCIA.* *Hahnemann Med. Coll. & Hosp.*

11:30 **2739.** Action of glycopyrrolate (AHR-504) on gastric secretion in dogs. R. S. ALPHIN,* B. V. FRANKO* AND J. W. WARD.* *Lilly Research Labs.*

11:45 **2740.** Fate of pancreatic proteolytic enzymes in the course of acute hemorrhagic pancreatitis. I. T. BECK, E. PINTER,* R. D. MCKENNA,* A. C. RITCHIE* AND E. SOLYMAR.* *Royal Victoria Hosp.*

Pathology Society Sessions—Friday, 9:00 a.m.

264. Radiation

FRI. A.M.—RITZ-CARLTON, RITZ HALL

Chairmen: A. C. Upton; C. C. Congdon

9:00 **2741.** Dehydrogenase activity in liver and spleen of rats following whole body x-irradiation. E. KIVY-ROSENBERG* AND J. CASCARANO.* *New York Univ.*

9:15 **2742.** Amino acid excretion in humans exposed to large doses of x-irradiation. FRANK M. GANIS,* MALCOLM W. HENDRICKSON,* THOMAS D. BROWN,* PATRICK D. GIUNTA* AND JOE W. HOWLAND. *Univ. of Rochester.*

9:30 **2743.** Delayed antibody response in x-irradiated rabbits. MARVIN B. RITTENBERG* AND ERIC L. NELSON. *UCLA.*

9:45 **2744.** Effect of subtotal body shielding on the total nucleated cell count of directly irradiated femoral bone marrow. R. J. MCALPINE,* R. A. FISKEN* AND JEAN PETERS.* *Parke, Davis.*

10:00 **2745.** Mechanism of red cell increase following splenic irradiation in chronic myelogenous leukemia. DWIGHT J. HOTCHKISS, JR.* AND MATTHEW H. BLOCK. *Univ. of Colorado.*

10:15 **2746.** Radiation induced cardio-pulmonary dysfunction in dogs. SOL M. MICHAELSON,* WILLIAM J. QUINLAN, JR.,* BERNARD SCHREINER,* RODERICK A. E. THOMSON,* MARYLOU INGRAM,* CARL L. HANSEN, JR.* AND JOE W. HOWLAND. *Univ. of Rochester.*

10:30 **2747.** Reduction of fetal mortality and malformation from x-irradiation by the use of the uterine vascular clamping technique. ROBERT L. BRENT, JOHN B. FRANKLIN* AND BOOKER T. BOLDEN.* *Jefferson Med. Coll.*

10:45 **2748.** Postirradiation treatment of mice with a pseudomonas pyrogen. E. JOHN AINSWORTH.* *Argonne Natl. Lab.*

11:00 **2749.** Comparative retention of Ca^{45} and Sr^{85} in man. J. SAMACHSON* AND H. SPENCER.* *Montefiore Hosp.*

11:15 **2750.** AET protection against HN_2·HCl toxicity in the mouse. T. P. MCDONALD,* M. ASANO* AND D. G. DOHERTY. *Oak Ridge Natl. Lab.*

265. Endotoxins

FRI. A.M.—RITZ-CARLTON, BALLROOM

Chairmen: C. A. Stetson; R. T. McCluskey

9:00 **2751.** "Toxin-antitoxin" phenomena in burned or injured germfree rats and mice. S. R. ROSENTHAL, T. WARD,* L. LINDHOLM* AND W. SPURRIER.* *Univ. of Illinois and Notre Dame Univ.*

9:15 **2752.** Potassium and the lethal and tumor-necrotizing properties of bacterial polysaccharide. JAMES R. CROOK* AND RUSSELL S. JONES. *Univ. of Utah.*

9:30 **2753.** Chemical structure and location of firmly-bound lipids present in some Gram-negative bacterial endotoxins. ALOIS H. NOWOTNY.* *City of Hope Med. Ctr.*

9:45 **2754.** In vitro potentiation of serum proteolytic activity by Proteus vulgaris lipopolysaccharide. W. ANTOPOL, G. H. FRIED AND C. CHRYSSANTHOU.* *Beth Israel Hosp.*

10:00 **2755.** Serotonin release after injection of E. coli endotoxin in the rabbit. R. B. DAVIS,* W. R. MEEKER* AND W. L. BAILEY.* *Univ. of Minnesota.*

10:15 **2756.** Effects of paranylene aerosol on viral- and endotoxin-induced lung consolidation. WILLIAM M. KING,* F. W. MITCHELL,* KATHERINE LUDWIG* AND H. W. RITTER.* *Wm. S. Merrell Co.* (Pharmacol.)

10:30 **2757.** Inhibition of induced inflammation by paranylene. ALAN C. LEVY,* ROBERT H. DAVIS,* DORSEY E. HOLTKAMP, THOMAS H. BEAVER* AND ROBERT D. STRAIN.* *Wm. S. Merrell Co.* (Pharmacol.)

10:45 **2758.** Shwartzman reaction: production of renal lesions by intra-aortic infusion of thrombin. BENJAMIN ROBBINS* AND ROBERT D. COLLINS.* *Vanderbilt Univ.*

11:00 **2759.** Generalized Shwartzman reaction in nephrectomized rabbits. DONALD A. B. LINDBERG.* *Univ. of Missouri.*

11:15 **2760.** Effect of trypsin inhibitors on Shwartzman phenomenon. C. CHRYSSANTHOU* AND W. ANTOPOL. *Beth Israel Hosp.*

266. Virus

FRI. A.M.—RITZ-CARLTON, CARLTON ROOM

Chairmen: C. C. Randall; F. Allison, Jr.

9:00 **2761.** Electron microscope study of ectromelia infected mouse liver. ELIZABETH H. LEDUC. *Brown Univ.*

9:15 **2762.** Effect of heavy water on mouse ectromelia infection. SAMUEL W. FRENCH,* ANN M. HUGHES* AND BENJAMIN V. SIEGEL. *Univ. of California and Lawrence Radiation Lab., Berkeley.*

9:30 **2763.** Cytochemical effects of fluorinated pyrimidines on replication of psittacosis virus in tissue culture. MORRIS POLLARD, YOH TANAMI* AND T. J. STARR.* *Univ. of Texas.*

9:45 **2764.** Experimental measles in suckling mice and tissue culture. DAVID T. IMAGAWA AND JOHN M. ADAMS. *UCLA and VA Hosp., Long Beach, California.*

10:00 **2765.** Parotitis produced in weanling mice by Coxsackie B-1 (Conn.-5). WILLIAM B. WILSON.* *Vanderbilt Univ.*

10:15 **2766.** Pathogenesis of West Nile virus infection in mice. CHESTER M. SOUTHAM, WILLIAM NEWMAN* AND GIACOMO MESSORE.* *Sloan-Kettering Inst.*

10:30 **2767.** An evaluation of virus-induced Rous sarcoma as an experimental model in chemotherapy. ROMAN J. PIENTA,* EUGENE H. BERNSTEIN* AND VINCENT GROUPÉ. *Rutgers State Univ.* (Immunol.)

10:45 **2768.** Effects of chlorpromazine upon sarcoma 37 and Rous sarcoma tumors. E. FORCE* AND O. LIU. *Smith, Kline and French.* (Immunol.)

11:00 **2769.** Hemangiomata in the CAM of the chick embryo following membrane inoculation of Rous sarcoma virus. HELEN V. COATES.* *Johns Hopkins Univ.*

11:15 **2770.** Pathogenicity of mycoplasma arthriditis (PPLO). E. VIRGIL HOWELL* AND RUSSELL S. JONES. *Univ. of Utah.*

Nutrition Society Sessions—Friday, 9:00 a.m.

267. Protein III: Amino Acid Metabolism

FRI. A.M.—AMBASSADOR "22" CLUB

Chairmen: A. E. Harper; H. Rosenberg

9:00 **2771.** An assay for the free lysine in rat plasma. J. M. McLAUGHLAN,* F. NOEL* AND A. B. MORRISON. *Dept. of Natl. Health and Welfare, Ottawa, Canada.*

9:15 **2772.** Factors influencing the lysine requirement of the rat. A. B. MORRISON, E. J. MIDDLETON,* J. M. McLAUGHLAN* AND J. A. CAMPBELL. *Dept. of Natl. Health and Welfare, Ottawa, Canada.*

9:30 **2773.** Effect of carbohydrates and lysine supplementation on utilization of dietary protein and fat deposition in the liver of rats. YET-OY CHANG* AND SYAMALA RAJENDER.* *Univ. of Wyoming.*

9:45 **2774.** Biological distribution of dihydroxy acid dehydrase and valine biosynthesis. ROBERT L. WIXOM, SARA KAY WADE* AND GEORGE B. HOWELL.* *Univ. of Arkansas.*

10:00 **2775.** A dihydroxy acid dehydrase in spinach extracts. MASAO KANAMORI,* JOYCE SHERWOOD* AND JAMES W. BLANKENSHIP.* *Univ. of Arkansas.*

10:15 **2776.** Effect of threonine deficiency on phosphorus levels in the albino rat. DOROTHY ARATA,* CATHERINE CARROLL* AND DENA CEDERQUIST. *Michigan State Univ.*

10:30 **2777.** Effect of threonine deficiency on susceptibility of rats to infection with trypanosoma cruzi. ROBERT G. YAEGER* AND O. NEAL MILLER. *Tulane Univ.*

10:45 **2778.** Production of phenylketonuria in the rat. KARLEEN C. NEILL* AND H. G. LANGFORD. *Univ. of Mississippi.* (Physiol.)

11:00 **2779.** Effect of specific amino acid deficiencies on pancreatic enzymes in the rat. R. L. LYMAN AND SUE S. WILCOX. *Univ. of California, Berkeley.*

11:15 **2780.** Carbamyl aspartate synthesis in pigeon liver. M. A. GRILLO* AND S. P. MISTRY.* *Univ. of Illinois.*

11:30 **2781.** Amino acid excretion of vitamin E-deficient rats. LEWIS A. BARNESS, WILLIAM J. MELLMAN,* ROBERT J. SMITH,* ROBERT E. NOCHO* AND THOMAS A. TEDESCO.* *Univ. of Pennsylvania Hosp. and Med. Sch.*

11:45 **2782.** Urinary excretion of beta-aminoisobutyric acid by patients after surgical operations. S. LEVEY AND T. WOODS.* *Western Reserve Univ. and Univ. Hosps. of Cleveland.*

268. Vitamins II: A, E and K

FRI. A.M.—AMBASSADOR, ROTUNDA

Chairmen: J. G. Bieri; L. J. Machlin

9:00 **2783.** Metabolism of radioactive vitamin A and vitamin A acid. P. T. VARANDANI,* G. J. WRIGHT,* G. WOLF* AND B. CONNOR JOHNSON. *Univ. of Illinois.*

9:15 **2784.** Degradation of labeled B-carotene. F. J. LOTSPEICH,* R. F. KRAUSE, V. G. LILLY* AND H. L. BARNETT. *West Virginia Univ. Med. Ctr. and West Virginia Univ.*

9:30 **2785.** Utilization of carotene in rations containing irradiated carrots. IAN J. TINSLEY AND EDWARD C. BUBL.† *Oregon State Coll.*

9:45 **2786.** Hydrolysis of saturated and unsaturated vitamin A esters. EDWARD G. HIGH AND WINSTON M. BRYANT, JR.* *Meharry Med. Coll.*

10:00 **2787.** Estimation of biological potency of vitamin A. T. K. MURRAY AND J. A. CAMPBELL. *Dept. of Natl. Health and Welfare, Ottawa, Canada.*

10:15 **2788.** Ethoxyquin effect on egg yolk pigmentation. Y. V. ANJANEYALU,* A. A. KURNICK,* M. G. VAVICH AND B. L. REID.* *Univ. of Arizona.*

10:30 **2789.** Relationship of dietary linoleate to tocopherol. R. B. ALFIN-SLATER, H. W. HANSEN* AND R. L. SHULL.* *Univ. of California.*

10:45 **2790.** Fatal syndrome associated with vitamin E status of pregnant rats. MARY ALICE KENNEY* AND CHARLOTTE RODERUCK. *Iowa State Univ.*

11:00 **2791.** Relationship of estrogen and vitamin K in the rat. ANNA MARIA PAOLUCCI,* P. B. RAMA RAO* AND B. CONNOR JOHNSON. *Univ. of Illinois.*

† Deceased June 1960.

Immunology Society Sessions—Friday, 9:00 a.m.

269. Hypersensitivity III

FRI. A.M.—SHELBURNE, GRANDE BALLROOM

Chairman: B. H. Waksman

9:00 **2792.** Antigen-antibody interaction in the guinea pig small intestine. HAROLD C. NEU,* HARRY G. RANDALL* AND ABRAHAM G. OSLER. *Johns Hopkins Univ.*

9:15 **2793.** Anaphylactic reaction of the guinea pig heart to antibovine serum proteins. G. A. FEIGEN, G. TERRES* AND R. L. EVANS.* *Stanford Univ.* (Physiol.)

9:30 **2794.** Inhibition of the anaphylaxis sensitizing and adjuvant effects of B. pertussis. LEON S. KIND AND SUZANNE K. ROFFLER.* *Univ. of California.*

9:45 **2795.** Acute and protracted anaphylactic shock after subcutaneous challenge in random-bred and inbred guinea pigs. SANFORD H. STONE. *Natl. Insts. of Health.*

10:00 **2796.** Reverse passive systemic anaphylaxis. JACOB J. PRUZANSKY* AND SAMUEL M. FEINBERG. *Northwestern Univ.*

10:15 **2797.** Relation between molecular weight of antigen and ability to elicit passive cutaneous anaphylaxis. SIDNEY LESKOWITZ AND ZOLTAN OVARY. *Harvard Univ. and New York Univ.*

10:30 **2798.** Use of old world monkeys in the diagnosis of human allergy to castor. LAURENCE L. LAYTON,* STEPHEN LEE* AND FLOYD DEEDS. *U.S. Dept. of Agriculture.* (Biochem.)

10:45 **2799.** Effect of storage on human skin-sensitizing antibody (reagin). JOHN G. HARTER.* *Harvard Univ.*

11:00 **2800.** Single injection therapy with emulsified venom in wasp-sting allergy. MARY H. LOVELESS. *Cornell Univ.*

11:15 **2801.** Anergy of delayed allergy in Hodgkin's disease patients. W. J. WARWICK,* O. ARCHER,* W. D. KELLY* AND A. R. PAGE.* *Univ. of Minnesota.*

11:30 **2802.** Contact dermatitis in mice. ALFRED J. CROWLE AND CLARICE M. CROWLE.* *Webb Inst. and Univ. of Colorado.*

270. Antigen-Antibody Reactions

FRI. A.M.—SHELBURNE, KERRY HALL

Chairman: P. H. Maurer

9:00 **2803.** Certain quantitative aspects of agar column diffusion analyses. WILLIAM G. GLENN. *Brooks AFB.*

9:15 **2804.** Mathematical analysis of immunoelectrophoresis. FREDERICK ALADJEM, HENRY KLOSTERGAARD* AND ROBERT W. TAYLOR.* *Univ. of Southern California.*

9:30 **2805.** Quantitation of serum globulins by immunoelectrophoretic analysis. RICHARD HONG* AND CLARK D. WEST.* *Univ. of Cincinnati.*

9:45 **2806.** Polarographic determination of the equilibrium and limiting rate constants of antibody-hapten reactions. A. H. SEHON AND H. SCHNEIDER.* *McGill Univ.*

10:00 **2807.** Detection of antigen-antibody reaction by fluorescence polarization. W. B. DANDLIKER AND G. A. FEIGEN. *Univ. of Miami and Stanford Univ.* (Biochem.)

10:15 **2808.** Effect of pH on dissociation of protein antigen-antibody complexes. YASUO YAGI. *Roswell Park Mem. Inst.*

10:30 **2809.** Effect of salt and pH on the rate of neutralization of luciferase by specific antibody. F. I. TSUJI. *Univ. of Pittsburgh.* (Biochem.)

10:45 **2810.** Precipitation of nonprecipitating and redissolved precipitating antigen-antibody complex by ammonium sulfate, anti-antibody and alkali treatment. LUDWIG A. STERNBERGER, JOHN J. CUCULIS,* HOWARD G. MEYER* AND NANCY J. HOY.* *Army Chem. Ctr.*

11:00 **2811.** Coagulated specific complexes as adsorbents for antigen: coagulating agents and conditions. G. BONAR SUTHERLAND. *Univ. of Saskatchewan.* (Physiol.)

11:15 **2812.** Mechanism of the BDB hemagglutination technique. L. GYENES* AND A. H. SEHON. *McGill Univ.*

11:30 **2813.** Specific binding of I^{131}-labeled ragweed pollen extract by human and rabbit antisera. DAVID LIDD* AND RICHARD S. FARR. *Univ. of Pittsburgh.*

11:45 **2814.** Localization properties of radioiodinated fragments of antirat kidney antibody. PETER STELOS, YASUO YAGI AND DAVID PRESSMAN. *Roswell Park Mem. Inst.*

12:00 **2815.** Interaction of bovine serum albumin and its chicken antibodies. J. W. WILLIAMS AND D. D. DONERMEYER.* *Univ. of Wisconsin.* (Biochem.)

Calendar 1961 FEDERATION MEETING—ATLANTIC CITY, NEW JERSEY

	Sunday, April 9	Monday, April 10	Tuesday, April 11	Wednesday, April 12	Thursday, April 13	Friday, April 14
MORNING						
AFTERNOON						
EVENING						

Reminders: Federation Joint Session—Tuesday, 7:45 P.M., Convention Hall, Ballroom (see page 477 for program); Motion Picture Sessions—Tuesday, Wednesday, and Thursday from 9:00 A.M. to 5:00 P.M., Convention Hall, Main Arena Floor, Room D (see page 477 for program); Society Dinners, Social Mixers, and Smokers—Wednesday evening (see program of particular society).

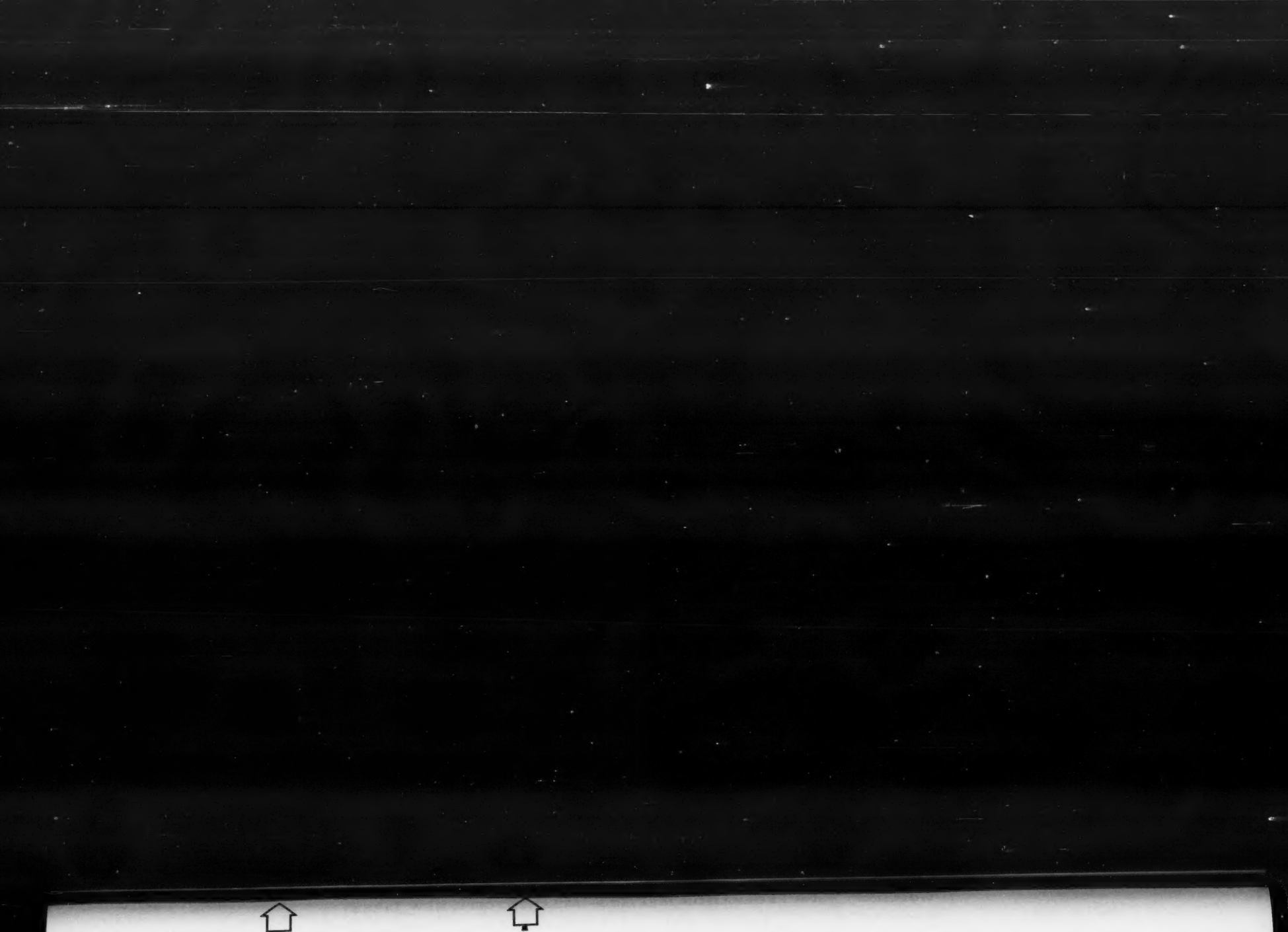
DIRECTORY OF INDUSTRIAL SCIENTIFIC EXHIBITS AND INSTITUTIONAL EXHIBITS

By referring to the first three pages of the following Directory, you can quickly locate any exhibit by aisle and booth number. These pages contain an alphabetically arranged Quick Reference Index to Exhibits, and a diagram of the exhibit area as related to the Meeting Rooms on the first floor of Convention Hall.

The balance of the Directory provides detailed information on products or subject matter presented in each exhibit. We trust you will find this new arrangement convenient.

The exhibit hall will be open as follows:

MONDAY	—	8:00 a.m.	—	5:00 p.m.
TUESDAY	—	8:45 a.m.	—	5:00 p.m.
WEDNESDAY	—	8:45 a.m.	—	5:00 p.m.
THURSDAY	—	8:45 a.m.	—	5:00 p.m.
FRIDAY	—	8:45 a.m.	—	5:00 p.m.



1961 Meeting: Federation of American Societies for Experimental Biology

QUICK REFERENCE INDEX TO EXHIBITS

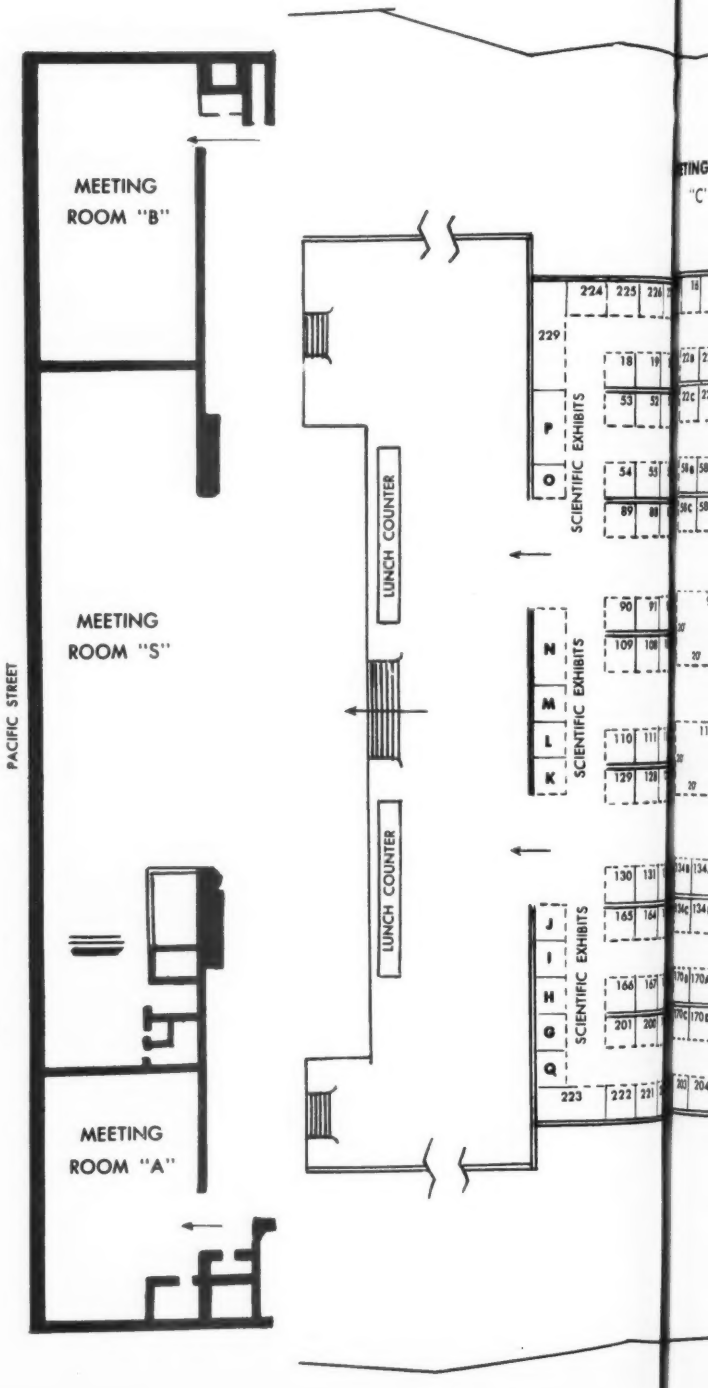
COMPANY	BOOTH NO.	AISLE
Academic Press Inc.	26–27	A
Acme Metal Prod., Inc.	86–87	C
Advanced Instruments, Inc.	154	F
Allied Mills	14	A
A. S. Aloe Co.	141–143	E
American Electronic Labs., Inc.	173	F
American Instrument Co., Inc.	170A–170B	F
American Optical Co.	58C–58D	C
American Sterilizer Co.	108–109	D
American Tobacco Co.	Special	A
Ames Research Lab.	180C	G
H. Reeve Angel & Co., Inc.	134C–134D	F
Animal Cage Specialties Co.	18	A
Animatic Animal Care Prod., Inc.	222	G
Applied Physics Corp.	171–172	F
Assoc. of American Univ. Presses	165	F
Baird-Atomic, Inc.	116	D–E
Baltimore Instrument Co., Inc.	181	F
Barnstead Still & Sterilizer Co.	53	B
Bausch & Lomb Inc.	180A–180B	F
Beckman Instruments, Inc.	95	C–D
B-D Laboratories, Inc.	197	G
Bellco Glass Inc.	157	F
Bethlehem Apparatus Co., Inc.	208	G
Blakiston Div., McGraw-Hill Book Co.	107	D
S. Blickman, Inc.	134A–134B	E
Brinkmann Instruments, Inc.	149–152	F
Bronwill Scientific	156	F
Buchler Instruments, Inc.	104–105	D
Burgess Publishing Co.	130	E
California Corp. for Biochemical Research	205–206	G
Cambridge Instrument Co., Inc.	11–12	A
Camm Research Institute, Inc.	212	G
Canal Industrial Corp.	54–55	B
Carworth Farms, Inc.	6	A
Chemical & Pharmaceutical Industry Co., Inc.	180D	G
The Coca-Cola Co.	Special	G
Coleman Instruments, Inc.	66–67	B
Warren E. Collins, Inc.	166	F
Corning Glass Works	83	C
Coulter Electronics, Inc.	219–220	G
Custom Engineering & Development Co.	22C–22D	B
Delmar Scientific Laboratories, Inc.	65	B
Difco Labs.	44	B
Lester A. Dine Co.	47	B
E-C Apparatus Co.	19–20	A
E & M Instrument Co., Inc.	168–169	F
Eberbach Corp.	92–93	C
Electric Hotpack Co., Inc.	62–64	B
Electronics for Medicine, Inc.	32A–32B	A
F & M Scientific Corp.	186–188	G
Falcon Plastics Co.	106	D
Fisher Scientific Co.	59–61	B
Ford Kennels, Inc.	34	A
Foringer & Co., Inc.	209	G
J. Melvin Freed, Inc.	42	B
French Atomic Energy Commission	229	A
General Lab. Supply Co.	13	A
Gilford Instrument Labs., Inc.	32C	A
Gilson Medical Electronics	117	D–E
Graf-Apsco Co.	28	A
Grason-Stadler Co., Inc.	211	G
Grass Instrument Co.	135–137	E
Grune & Stratton, Inc.	184	F
William J. Hacker & Co., Inc.	68A	B
Harford Metal Prod. Inc.	214	G
Harshaw Chemical Co.	23–25	A

COMPANY	BOOTH NO.	AISLE
Hartman-Leddon Co.	225	A
Harvard Apparatus Co., Inc.	178–179	F
Heinicke Instruments Co.	32D	B
Paul B. Hoeber, Inc.	51	B
Industrial Systems Co.	10	A
Instrumentation Associates, Inc.	98–101	C
Instrumentation Lab., Inc.	213	G
Instruments Publishing Co.	228	A
International Equipment Co.	68C–68D	C
Interscience Publishers, Inc.	7	A
Isotopes Specialties Co.	138	E
Jarrell-Ash Co.	227	A
Keithley Instruments, Inc.	217	G
Keystone Plastics Co.	159–160	F
Kimble Glass Co.	144A–144B	E
Kontes Glass Co.	112–113	D
David Kopf Instruments	195	G
L K B Instruments, Inc.	190–191	G
Labline, Inc.	75	C
Labasco, Inc.	224	A
Arthur S. LaPine & Co.	148	E
Lea & Febiger	118	D
Lehigh Valley Electronics Engr. & Mfg. Co.	50	B
E. Leitz, Inc.	77–78	C
Linbro Chemical Co., Inc.	56	B
Lipshaw Mfg. Co.	201	G
J. B. Lippincott Co.	125	E
Little, Brown and Co.	38	B
The London Co. (formerly Welwyn Intern'l)	8–9	A
Lourdes Instrument Corp.	73–74	C
Macmillan Co.	90–91	C
Mark Co.	5	A
Meinecke & Co.	155	F
Metalwash Machinery Corp.	58A–58B	B
Mettler Instrument Corp.	37	B
Microbiological Associates, Inc.	114	D–E
Micro Metric Instrument Co.	193	G
Millipore Filter Corp.	21	A
Minneapolis-Honeywell Reg. Co.	3	A
C. V. Mosby Co.	128–129	E
Mnemotron Corp.	210	G
Nalge Co., Inc.	192	G
National Aniline Div. Allied Chem. Corp.	215	G
National Instrument Labs., Inc.	163–164	F
New Brunswick Scientific Co., Inc.	144C–144D	F
New England Nuclear Corp.	96	C–D
Nuclear-Chicago Corp.	115	D–E
Nuclear-Ohio, Inc.	223	G
Nuclear Measurements Corp.	76	C
Nucleonic Corp. of America	221	G
Offner Electronics Inc.	182	F
Organon Inc.	70	B
Oxford Univ. Press	153	F
Pabst Labs.	158	F
Packard Instrument Co., Inc.	97	C–D
Paxton Processing Co., Inc.	71	B
Pel-Freez Co.	226	A
Pentex, Inc.	41	B
Pergamon Press Inc.	45	B
Phipps & Bird, Inc.	43	B
Phoenix Precision Instrument Co., Inc.	94	C–D
Photovolt Corp.	185	G
Picker X-Ray Corp.	175–176	F
Porter-Mathews Co., Inc.	22A–22B	A
Precision Scientific Co.	196	G
Professional Tape Co., Inc.	72	B
Quaracell Products, Inc.	4	A

COMPANY	BOOTH NO.	AISLF
Ralston Purina Co.	177	F
Radiation Counter Labs.	167	F
Research Specialties Co.	122–124	E
O. C. Rudolph & Sons, Inc.	200	G
Sanborn Co.	139–140	E
Sandoz Pharmaceuticals	29–30	A
E. H. Sargent and Co.	31	A
W. B. Saunders Co.	102–103	D
Schaar and Co.	183	F
Schuco Scientific	216	G
Schwarz Bioresearch	79	C
Schwarzer Co.	52	B
Scientific Glass App. Co., Inc.	40	B
Scientific Industries, Inc.	202–204	G
Scientific Instruments	35	A
Scientific Products	88–89	C
Selas Corp. of America	218	G
Sigamotor, Inc.	207	G
Ivan Sorvall, Inc.	84–85	C
E. R. Squibb & Sons	1	A
A. E. Staley Mfg. Co.	110–111	D
C. H. Stoelting Co.	68B	B
Technical Associates	2	A
Technicon Instruments Corp.	119–121	D
Arthur H. Thomas Co.	80–82	C
Torsion Balance Co.	194	G
Tracerlab, Inc.	131–133	E
Tri-R Instruments	189	G
Vanguard Instrument Co.	17	A
Virtis Co., Inc.	15–16	A
Volk Radiochemical Co.	57	B
Geo. H. Wahmann Mfg. Co.	198–199	G
Waters Corp.	126–127	E
Wild Heerbrugg Instruments, Inc.	36	A
John Wiley and Sons, Inc.	69	B
Wilkens-Anderson Co.	39	B
Will Corp.	46	B
Williams & Wilkins Co.	174	F
Wilmot Castle Co.	170C–170D	G
Worthington Biochemical Corp.	48–49	B
Year Book Publishers, Inc.	33	A
Yellow Springs Instrument Co., Inc.	161	F
Carl Zeiss, Inc.	145–147	E

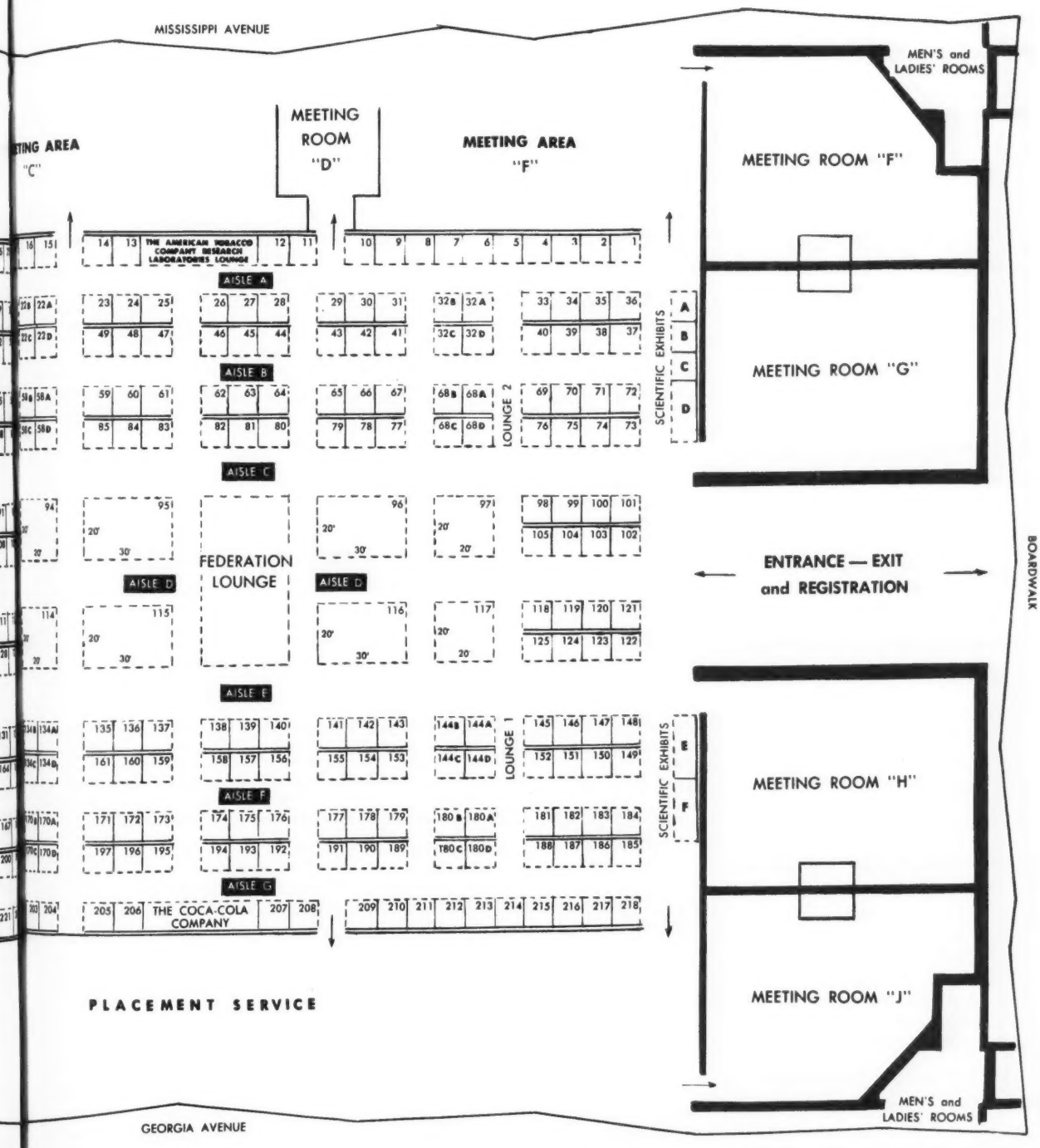
INSTITUTIONAL EXHIBITS

INSTITUTION	BOOTH
American Assoc. for Advancement of Science	G
American Heart Association, Inc.	I
Animal Care Panel, Inc.	J
Annual Reviews Inc.	Federation Lounge
Biological Abstracts, Inc.	B
Center for Aging Research, NIH	Q
Federation of American Societies for Experimental Biology	Federation Lounge
Muscular Dystrophy Assoc. of America, Inc.	D
National Heart Institute—Gerontology Branch	N
Nat'l Inst. of Arthritis and Metabolic Diseases, NIH	K
Nat'l Inst. of Neurological Diseases and Blindness, NIH	E
Nat'l Science Foundation	C
Scientists' Comm. for Radiation Information, Inc.	H
Tobacco Industry Research Comm.	L
University of Kentucky—Dept. of Physiology	A
University of Texas—Medical Branch	O
Veterans Administration Dental Service	P
Washington University—Dept. of Pathology	F
The Wistar Institute	M



ERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY

ATLANTIC ITORIUM • ATLANTIC CITY, NEW JERSEY • APRIL 10, 11, 12, 13, 14, 1961



EXHIBITS

TECHNICAL SCIENTIFIC EXHIBITS

ACADEMIC PRESS, New York City *(Booths 26 & 27, Aisle A)*, will display *The Bacteria*, Gunsalus and Stanier, editors; *The Enzymes*, 2nd edition, Boyer, Lardy and Myrbäck, editors; *Mineral Metabolism*, Comar and Bronner, editors; *The Cell*, Brachet and Mirsky, editors; *The Functions of the Blood*, Macfarlane, editor; *Hormones in Blood*, Gray and Bacharach, editors; Aisenberg, *Glycolysis of Tumors;* Gilmour, *Biochemistry of Insects*. Sample copies of the Press' new periodicals. *Journal of Theoretical Biology* and *General and Comparative Endocrinology* will also be shown.

ACME METAL PRODUCTS, INC., Chicago, Ill. *(Booths 86 & 87, Aisle C)*, will exhibit their line of cages, racks, and animal room equipment. Now in their 49th year, they are well known for quality laboratory cages offering the highest degree of craftsmanship, efficiency, and animal comfort. Cages available for all laboratory animals. Visit the exhibit and see their newest improvements.

ADVANCED INSTRUMENTS, INC., Newton Highlands, Mass. *(Booth 154, Aisle F)*. A variety of electrolyte measuring and cardiovascular instruments will be demonstrated. Their Flame Photometer: simple and precise Na and K; their new Osmometer: simpler, smaller, more reliable osmolality; EIL Vibron Electrometer: for ultra-stable, high impedance, low voltage measurements—0.002 pH, pNa, pCO_2; and the Medtronic line of transistorized Pacemakers; battery-powered, ultra-reliable heart monitoring equipment; compact defibrillators, bipolar electrocoagulation generator and forceps.

ALLIED MILLS, INC., Fort Wayne, Ind. *(Booth 14, Aisle A)*, will display Wayne Laboratory Diets for mice, rats, rabbits, guinea pigs, and monkeys, as well as the several Wayne Dog Foods which are complete rations for dogs of all types and sizes. Featured also will be the self-feeders for dogs to be used in laboratories and kennels. Representatives will be on hand to discuss their research work and products.

A. S. ALOE COMPANY, St. Louis, Mo. *(Booths 141, 142 & 143, Aisle E)* will display a variety of merchandise designed to meet the needs of the biological scientist. Among these will be the Mouse Spirometer for oxygen up-takes on small animals and insects. The Lucky Germ Free Animal Cage Fairchild Sound Movie Apparatus; Time-Lapse Photographic Apparatus; Phase and Fluorescent Microscopy; Aloe Micro-Surgical Unit; and the DeFonbrune Micro Forge and Manipulator.

AMERICAN ELECTRONICS LABS., INC., Philadelphia, Pa. *(Booth 173, Aisle F)*, will feature their complete line of specialized physiological instrumentation. This includes the Cuvette Oximeter, new electronic stimulus devices, and high-gain DC amplifiers. A significant new development in the field of temperature telemetering will be shown in the Model 196 Radio Thermometer, one of the first inexpensive, commercially available systems. New design in the Intra-Cardiac Phonocatheter (the heart microphone) will also be shown.

AMERICAN INSTRUMENT CO., INC., Silver Spring, Md. *(Booths 170A & B, Aisle F)*, will feature: Titra-Colormat, an automatic colorimetric titration apparatus; Spectrophosphorimeter, for recording of spectra and decay of phosphorescent emission from liquids at temperatures approximating liquid nitrogen; Meniscomatic Buret (direct digital reading of delivered titrant) with enlarged volume (32 ml) reservoir; Chloride Titrator, which rapidly and accurately determines concentration of chlorides in solution by coulometric titration with silver ions; and Research Gas Chromatograph, utilizing various detectors and liquid injection systems.

AMERICAN OPTICAL COMPANY, Buffalo, N. Y. *(Booths 58C & D, Aisle C)*, will demonstrate instrumentation for fluorescence microscopy suitable for both tagged antibody and exfoliative cytology techniques. The AO Baker Interference Microscope will be demonstrated along with a representative selection of AO Spencer Phase laboratory and stereoscopic microscopes, photomicrographic equipment, surgical microscope and automatic Microtome Knife Sharpener. In addition, they will show their all-new AO Spencer Sixty Series Teaching Microscopes.

AMERICAN STERILIZER COMPANY, Erie, Pa. *(Booths 108 & 109, Aisle D)*. Their Scientific and Industrial Department will display a full line of microbiological equipment. Featured equipment to be demonstrated are the Freeze Drying Apparatus for the preservation and concentration of labile substances and the "Can-O-Gas" table model sterilizer. Equipment such as Biogen continuous culture apparatus, Laboratory Sterilizer, Water Stills, Flasks and Spordex will also be shown.

AMERICAN TOBACCO COMPANY, Department of Research and Development, Richmond, Va. *(Special Area, Aisle A)*, will display illuminated color pictures on the culture of tobacco and the exciting story of cigarette manufacture. Technical literature, including a newly revised anl enlarged edition of "A Summary of Biologic Research on Tobacco Supported by The American Tobacco Company," will be available for distribution. Representatives will welcome your questions concerning research and control in the tobacco industry.

AMES RESEARCH LABORATORY, Elkhart, Ind. *(Booth 180C, Aisle G)*. Occult blood may be present in feces, urine, or other biological fluids in a variety of pathological conditions. The exhibit depicts the various means of testing for occult blood and the usefulness of simplified chemical tests as an adjunct in the treatment of disease as well as in its detection. Simplified tests for occult blood will be demonstrated.

H. REEVE ANGEL & CO., INC., Clifton, N. J. *(Booths 134C & D, Aisle F)*, will exhibit their complete line of Whatman filter and chromatography papers in addition to the Whatman Cellulose Ion Exchange products. Also shown will be special products such as Ion Exchange Resin Loaded Papers, Glass Fiber Papers, and Silicone Treated Papers. They will display, for National Appliance Company, a line of incubators and ovens and will introduce their new CO_2 Incubator.

ANIMAL CAGE SPECIALTIES CO., Oak Park, Ill. *(Booth 18, Aisle A)*, will display: custom-built, scientifically designed Laboratory Animal Cages, representing advanced ideas in animal housing; Stainless Steel Cages, featuring heliarc-welded seams, radii on inside edges and corners; Thrift-Line Model S-G Cages, combining stainless steel bottom section with galvanneal upper section; Kemax Gun, a revolutionary multi-purpose cleaning device using compressed air—applies solutions, detergent, and water under pressure.

ANIMATIC ANIMAL CARE PRODUCTS, INC., New Orleans, La. *(Booth 222, Aisle G)*, will display their Caging System to illustrate its unique features of design which offer extraordinary ease of accessibility, visibility, service, and cleaning. Its applicability to multiple uses is demonstrated by the operation of its parts as an interchangeable caging system.

APPLIED PHYSICS CORPORATION, Monrovia, Calif. *(Booths 171 & 172, Aisle F)*. New Cary Model 15 recording Spectrophotometer with range 1850 to 8000 Angstroms. Coupled scan and chart drive with wide choice of operating conditions provide spectral displays for most spectrophotometer problems. New Cary Auto Sampler automatically transfers samples to and from measurement cell of spectrophotometer or other instrument. Cary Model 31 Electrometer for precise determinations of pH changes for measuring ion currents from mass spectrometers and hydrogen flame detectors.

ASSOCIATION OF AMERICAN UNIVERSITY PRESSES, New York City *(Booth 165, Aisle F)*, will have a joint exhibit of recent books in the fields of biological science, biochemistry, medical and other sciences published by University Presses, each of which is a separate publishing organization. Books may be ordered at the booth or directly from the publishing press. A check list of the books on display will be available.

B-D LABORATORIES, INC., Rutherford, N. J. *(Booth 197, Aisle G)*, invite you to see their complete laboratory line. The B-B-L Division will feature Culture Media; dehydrated and prepared, Rimseal sterile disposable plated media, Sensi-Disc for microbial sensitivity testing and apparatus for the microbiological laboratory. The B-D Vacutainer Specimen Tubes, Culture Bottles, and related items will also be shown.

BAIRD-ATOMIC, INC., Cambridge, Mass. *(Booth 116, Aisles D & E)*, will display isotope instrumentation designed to meet the requirements of most classrooms, laboratories, research and clinical radioisotope work. The emphasis will be on reliability and versatility directed towards performances in all types of Geiger, proportional, and scintillation counting of alpha, beta, gamma and X-rays with ease and precision.

BALTIMORE INSTRUMENT COMPANY, INC., Baltimore, Md. *(Booth 181, Aisle F)*, will exhibit the Human Stereotaxic Instrument; Universal Stereotaxic Instrument for all types of laboratory animals which can be used on either brain or spinal cord; Small Type Stereotaxic Instrument for rodents and cats; Classroom Stereotaxic Instrument for rodents and cats; 5-micron, 2-micron, and 1-micron micrometers with non-rotating spindle; micromanipulators; and Carl Zeiss and E. Leitz Microscopes.

BARNSTEAD STILL AND STERILIZER CO., Boston, Mass. *(Booth 53, Aisle B)*, will exhibit the latest developments in water-purification equipment for research. Their high purity still will be featured, which produces water of one to five megohms electrical resistance and with a very low oxygen and CO_2 content. Disposable cartridge-type demineralizers, ultra-violet equipped distilled water storage tanks, and water and air filters will also be shown.

BAUSCH & LOMB INCORPORATED, Rochester, N. Y. *(Booths 180A & B, Aisle F)*, invite you to see two new instruments which represent major advancements in microscopy and spectrophotometry. The new DynaZoom Laboratory Microscope offers the viewer heretofore unobtainable magnifications from 17.5x thru 1940x with increased resolving power. The new Spectronic 505 is a low-cost ultraviolet-visible Recording Spectrophotometer with a double Grating Monochromator. Other instruments will also be shown.

BECKMAN INSTRUMENTS, INC., Fullerton, Calif. *(Booth 95, Aisles C & D)*. The Scientific and Process Instruments Division will feature a low-cost Infrared Spectrophotometer, Micro Blood pH Analysis System; and a DB Ultraviolet Spectrophotometer with compact recorder. The Spinco Division will display a new Preparative Ultracentrifuge with 50,000 rpm rotor; Amino Acid Analyzer with stream divider, performing peptide separations; Continuous Systolic Blood Pressure Monitor; Physiological Gas Analyzer with oxygen microelectrode; CO_2 Analyzer; new accessories for density gradient centrifugation; and a titanium analytical ultracentrifuge rotor.

BELLCO GLASS INC., Vineland, N. J. *(Booth 157, Aisle F)*. Their new V.I.P. Non-Corrosive Pipette and the Loughborough All-Glass Water Still will share the new-item spotlight in the booth. The Loughborough Still produces 4 liters per hour of Pyrogen free water from tap. Of no less importance will be the new DeLong Culture Flask and the line of Tissue Culture glassware.

BETHLEHEM APPARATUS CO., INC., Hellertown, Pa. *(Booth 208, Aisle G)*, will display their new GL50 Glassworking Lathe, featuring the new contour chucks with spindle clearance 0—64 mm, 5½" radial clearance, 19½" between centers, variable speed reversible drive. Other products include two new sizes—9" o.d. and 19" o.d. bench and floor type polariscopes for strain detection in glass and plastics. Their Bench Burner, Sharp Flame Hand Torch, and the Glassblowing Kit for chemists and other occasional glassblowers will also be shown.

THE BLAKISTON DIVISION, McGraw-Hill Book Co., New York City *(Booth 107, Aisle D)*, will display Rodahl, Nicholson, and Brown's *Bone as a Tissue;* Hoffman and Cranefield's *Electrophysiology of the Heart;* Schwartz and Hartz's *Hematology in Practice;* Stanbury, Wyngaarden, and Frederickson's *The Metabolic Basis of Inherited Disease;* White, Handler, Smith, and Steten's *Principles of Biochemistry* (3rd ed.); The Armed Forces Institute of Pathology's *Manual of Histologic and Special Staining Technics* (2nd ed.); and many other new titles.

S. BLICKMAN, INC., Weehawken, N. J. *(Booths 134A & B, Aisle E)*, will show Stainless Steel Micro-Biological Enclosures, equipped with microbiological filter canisters. The canisters are fitted with electric heating elements to destroy organisms trapped in the filters. This equipment is specially designed for the safe handling of viruses and other potentially dangerous microorganisms. Literature on 22 different types of Safety Enclosures will also be available.

BRINKMANN INSTRUMENTS INC., Great Neck, N. Y. *(Booths 149, 150, 151 & 152, Aisle F)*, will exhibit Sartorius analytical, micro and macro, and VDF Micro Torque balances; their micro manipulators; Metrohm automatic recording equipment for pH stat, potentiometric titrations and polarography; Metrohm equipment for blood pH measurements; Sartorius Freezing Microtome; Bender & Hobein curtain electrophoresis equipment; Desaga Apparatus for Thin Layer Chromatography;

Haake constant temperature circulators (high and low temperatures); hi-voltage electrophoresis equipment; and Schoeller ultrasonic instruments for electron microscopy and disintegration of bacteria.

BRONWILL SCIENTIFIC DIVISION, Will Corp., Rochester, N. Y. *(Booth 156, Aisle F)*, will display the latest Warburg Apparatus, Constant Temperature Circulator, Molecular Models, Infusion Apparatus, Magnetic Setting Thermometer-Thermoregulators, and the new Thin Sectioning Machine for preparing thin sections from bone, teeth and other hard materials.

BUCHLER INSTRUMENTS, INC., New York City *(Booths 104 & 105, Aisle D)*, will exhibit their complete line of Flash-Evaporators; Rotary Evapo-Mix; Chloridometers; Paper, Starch and Immuno-Electrophoresis; Freeze-Drying Equipment; Fraction Collectors, with continuous and sectional turntables, as well as a refrigerated model; UV Monitor; Water-Booster, to maintain adequate water pressure for two independent water aspirators; Polyburet, for accurate and handy dispensing of reagents; Omni-Shaker; Dialyzer; Glass Chromatography Columns.

BURGESS PUBLISHING COMPANY, Minneapolis, Minn. *(Booth 130, Aisle E)*, will display many books and manuals of interest to students, teachers, and research personnel. New books will include: *Nucleic Acid Outlines*, vol. I, Potter; *Laboratory Exercises in Invertebrate Physiology*, Welsh and Smith; *Handbook of Cell and Organ Culture*, Merchant, Kahn and Murphy; *Elementary Human Physiology Laboratory Manual*, Taylor and Sargent. Publishing information for prospective authors will be gladly given.

CALIFORNIA CORPORATION FOR BIOCHEMICAL RESEARCH, Los Angeles, Calif. *(Booths 205 & 206, Aisle G)*, will distribute wall-charts, new aid-for-the-biochemist and a catalogue describing nearly 2,500 biochemicals, including the biochemical products of C. F. Boehringer and Soehne. There will be an exhibit of Calbiochem-Tested specialized laboratory equipment. Representatives will be on hand to discuss the work of Calbiochem and answer questions.

CAMBRIDGE INSTRUMENT CO., INC., New York City *(Booths 11 & 12, Aisle A)*, will exhibit Multi-Channel Monitor Units for recording and monitoring various physiological and biophysical phenomena (both the direct-writing type and the photographic type, with new quick-acting paper speed changer); their Versa-Scribe Direct-Writing Portable Electrocardiograph; Audio-Visual Heart Sound Recorder; Research pH Meter; Dye Dilution Recorder; the new Huxley Ultra-Microtome; and a new Electrophoresis Scanner.

CAMM RESEARCH INSTITUTE, INC., Wayne, N. J. *(Booth 212, Aisle G)*, will feature a display of Hemlock Hollow Animal Diet, animal growth charts and pictures of the buildings and cages in which they raise their animals. Also displayed will be a new type of watering device which simplifies the watering of animals.

CANAL INDUSTRIAL CORPORATION, Bethesda, Md. *(Booths 54 & 55, Aisle B)*, will introduce this year the revolutionary new Disc Electrophoresis, which permits isolation of 20–35 protein fractions in a single sample. They will show several new models of U.V. Flow Analyzers for column chromatography; a Log/Linear Laboratory Recorder; a new series of Micro and Ultra-Microspectrophotometers; a new family of Monochromators and the new M–61 Electron Microscope.

CARWORTH FARMS, INC., New City, N. Y. *(Booth 6, Aisle A)*, one of the leading breeders of laboratory animals, will exhibit descriptive photographs and slides of the major operations involved in a commercial breeding establishment. The type of cages used for housing mice and rats at their Farms will be displayed. Literature and price lists will also be available at the booth.

CHEMICAL & PHARMACEUTICAL INDUSTRY CO., INC., New York City *(Booth 180D, Aisle G)*, will display "Erweka" All Purpose Lab-Master: fourteen available laboratory machines operated by one Universal Motor Drive; "Perpetua" Tube and Jar Filling Machines, which fill ointments, pastes and heavy liquids accurately into collapsible tubes, jars or bottles; Type AB Hand Operated Tablet Press, with a production rate of 1,000 tablets per hour; "Desaga" Laboratory Shaking Machine, with three-dimensional shaking action—simulates hand action, suitable for 5-liter bottle or several smaller ones.

THE COCA-COLA COMPANY, Atlanta, Ga. *(Special Area, Aisle G)*. Ice-cold Coca-Cola served through the courtesy and cooperation of the Coca-Cola Bottling Company, Atlantic City, and The Coca-Cola Company.

COLEMAN INSTRUMENTS, INC., Maywood, Ill. *(Booths 66 & 67, Aisle B)*, will exhibit and demonstrate several new items including a new automatic device for the determination of carbon and hydrogen, new line-operated pH meter with a new automatic titrator attachment. Also shown will be their Ultramicor Analytical Program and Automatic Nitrogen Analyzer.

WARREN E. COLLINS, INC., Boston, Mass. *(Booth 166, Aisle F)*, a leading manufacturer of pulmonary function equipment, plan to exhibit the latest improvements in this rapidly expanding field. Latest reports place deaths from pulmonary emphysema as second only to heart disease. This stimulates increased interest in pulmonary function testing for both office and hospital. For those whose interest lies in the field of blood dialysis, there will be the efficient, compact MacNeill-Collins Dialyzer in operation.

CORNING GLASS WORKS, Corning, N. Y. *(Booth 83, Aisle C)*, will display a comprehensive range of Pyrex brand Laboratory Glassware for Biological and Microbiological work. Included will be Blood Gas Apparatus; Burets-micro with Teffon stopcocks; dishes with permanent grids; filters and filter apparatus with porous glass elements. A new volumetric flask with a screw cap closure as well as screw-cap equipped Erlenmeyer flasks, culture and centrifuge tubes will also be shown.

COULTER ELECTRONICS, INC., Chicago, Ill. *(Booths 219 & 220, Aisle G)*, will demonstrate their Counter Research Model with automatic plotting of size distribution curves. Red and white blood cells, bacteria, tissue culture cells, or any particle larger than 0.5 microns in diameter can now be counted and automatically graphed for size distribution. The questionable accuracy and tedium of optical counting and sizing can be eliminated.

CUSTOM ENGINEERING AND DEVELOPMENT CO., St. Louis, Mo. *(Booths 22C & D, Aisle B)*, will demonstrate their line of Nitralyzer Nitrogen Meters and complete instrumentation for single-breath nitrogen wash-out determination; precision electronic Servo-Spirometers including one for small animal oxygen uptake; the new high dynamics waterless Wedge Spirometer with electrical volume and flow data outputs; the newly designed versatile Data Optimizing Computer which combines with any nonlinear instrument to produce linear output.

DELMAR SCIENTIFIC LABORATORIES, INC., Chicago, Ill. *(Booth 65, Aisle B)*, will exhibit Metabolism Cages for tracer studies in rat and mouse metabolism. Chemostat—a continuous culture apparatus for microorganism complete and ready to operate upon addition of culture and media. Wistreich Fat Extractor for rapid moisture and fat determination—a method for the simultaneous extraction of moisture and fat from biological materials.

DIFCO LABORATORIES, Detroit, Mich. *(Booth 44, Aisle B).* Newly developed and standardized microbiological specialties and laboratory reagents will be featured. Research and Development and Technical Service Representatives will be present to discuss your special requirements.

LESTER A. DINE CO., Woodside, N. Y. *(Booth 47, Aisle B),* will feature the Eastman Kodak Startech Camera which is an extremely simplified camera for taking color slides. This relatively low-cost camera is an excellent tool even in the hands of a complete novice. In addition, the new slide projection and viewing equipment plus a new device for the copying of X-rays and another for copying from a book or magazine will be shown.

EBERBACH CORPORATION, Ann Arbor, Mich. *(Booths 92 & 93, Aisle C),* will exhibit water Bath Shakers—both table model and large research model; general purpose Laboratory Shakers—reciprocating and rotating to include the Roto-Tilt Shaker, available with or without a hotplate; an integrated line of Stirring Apparatus, complete with a wide range of stirring accessories. A complete line of Waring Blendor Accessory Apparatus will also be shown.

E-C APPARATUS CO., Swarthmore, Pa. *(Booths 19 & 20, Aisle A),* will exhibit their 520 Countercurrent Fractionator with automatic drive mechanism and 200-tube extraction train on base 24" x 34", with mobile stand; their 455 Pressure Plate Electrophoresis Apparatus with water-cooled pressure plates and Power Supply to 0–1000 V; their 470 Vertical Gel Electrophoresis Apparatus with dual cooling plates and Cyanogum 41 kit; and their 475 Destaining Apparatus complete with pump, timer operation switch, and charcoal.

THE ELECTRIC HOTPACK CO., INC., Philadelphia, Pa. *(Booths 62, 63 & 64, Aisle B),* will exhibit a Portable Plant Growth unit, featuring indicating-recording controller, precise control to 110°F, humidity 50%-95% RH, air circulation, light intensity, refrigeration; aluminum interior for maximum light diffusion, air flow; portable walk- and reach-in incubators with automatic temperatures and humidities; stainless steel serological water bath for incubation or inactivation, 37°–56°C; bench furnace—heats to 1900°F for ashing, etc., new insulation gives larger chamber; portable forced-draft oven, 35°–280°C.

ELECTRONICS FOR MEDICINE, INC., White Plains, N. Y. *(Booths 32A & 32B, Aisle A),* will display the Model DR 8 multichannel Recorder with an automatic processor that will provide records within 10 seconds; a 4- or 8-channel monitor with 21" cathode ray tube; a 2-channel tape recorder for physiological phenomena; a 4-channel recorder with a combined scalar and loop camera; an amplifier for use with oxygen and hydrogen electrodes.

E & M INSTRUMENT CO., INC., Houston, Texas *(Booths 168 & 169, Aisle F),* will present the Physiograph and Dual Beam Neurophysiograph along with the associated transducers and accesories which comprise this complete modular recording system. These reliable and versatile instruments have widespread application for teaching and research in all branches of the Biological Sciences. The Dual Beam Neurophysiograph with preamplifiers and two-channel tape recorder are incorporated into a versatile console for oscilloscopic studies of electrophysiological events.

FALCON PLASTICS COMPANY, Div. B-D Labs., Inc., Los Angeles, Calif. *(Booth 106, Aisle D).* Representatives invite you to see their line of sterile disposable plastic labware. Featured will be Petri dishes, Counting dishes, Phage typing dishes, Swube tubes, Tissue Culture Wares, and Containers. The Cappel Division will feature animal blood products, Tissue Culture Media and Sera, diagnostic reagents and Caisoplastin for prothrombin time determination.

FISHER SCIENTIFIC CO., Pittsburgh, Pa. *(Booths 59, 60 & 61, Aisle B),* will exhibit, Mechrolab Osmometer for determining molecular weights; Beckman DB Spectrophotometer; Bausch & Lomb's Spectronic 505—the recording spectrophotometer; Coleman CompanION pH meter; the new Hemophotometer model; Clinical Gas Partitioner with bath and power supply, and their Laboratory Recorder, Reagent chemicals will also be shown. Specialists will be in attendance to discuss and demonstrate the equipment.

F & M SCIENTIFIC CORPORATION, New Castle, Del. *(Booths 186, 187 & 188, Aisle G),* will display and demonstrate Model 609 Flame Ionization Linear Programmed Temperature Gas Chromatograph for analysis of fatty acids, steroids, alkaloids, and amino acids; models 500 and 300 Linear Programmed Temperature Gas Chromatographs for the above analyses, dissolved gases in blood, and respiratory gases; model 141 Safety Ignition Unit-Schöniger Oxygen Flask for analysis of organic halides (e.g., PBI), sulfur and metals.

FORD KENNELS, INC., Indianapolis, Ind. *(Booth 34, Aisle A),* manufactures animal cages made of stainless steel, galvanized sheet, or aluminum. They make standard cages of steel and zinc sheets; cages for dogs, monkeys, rabbits, etc., either standard or special. In selling, the sales representative will call to help you in your selection.

FORINGER & CO., INC., Rockville, Md. *(Booth 209, Aisle G),* will show automatic equipment for short- and long-term maintenance of animals in experimental apparatus. This equipment feeds and waters the animal, presents preplanned stimuli in visual, aural, and tactile modalities, and accurately records responses. It injects precise amounts of drugs and withdraws samples of body fluids, presents complex choice problems, measures sensory thresholds and tabulates performance automatically. Descriptive literature will be available.

J. MELVIN FREED, INC., Perkasie, Pa. *(Booth 42, Aisle B),* will exhibit precleaned microscope slides packed in the Stand-Rite slide container that keeps slides in a vertical position, permitting easy handling. A variety of concavity slides will be shown and cut sizes of Corning Brand cover glass in a dispenser-type box.

FRENCH ATOMIC ENERGY COMMISSION, Paris, France *(Booth 229, Aisle A),* has prepared over 100 compounds labeled with carbon 14, sulfur 35, tritium, deuterium and nitrogene 15. Technical members of the staff will be in attendance during the exhibition. Possibility of synthesizing new products for research requirements will be discussed. Lists of available compounds and description of typical syntheses will be available.

GENERAL LABORATORY SUPPLY CO., Paterson, N. J. *(Booth 13, Aisle A),* will exhibit Sel-Rex pH Meter; O-Haus Deci-Gram Balance; Stirrers; Stone Automatic Titrator; Thermoregulators and Electronic Relays.

GILFORD INSTRUMENT LABORATORIES, INC., Oberlin, Ohio *(Booth 32C, Aisle B).* A new recording system for the measurement of absorbance of effluent from chromatographic columns will be displayed. Covering 10 absorbance units linearly with 1% accuracy, this stable device will save valuable research time. An absorbance recorder system for registration of enzyme activity from four samples, and their well-known instruments for the physiologist, including the Cuvette Densitometer for Oximetry and Dye-Dilution studies, will also be shown.

GILSON MEDICAL ELECTRONICS, Middleton, Wisc. *(Booth 117, Aisles D & E),* presents the new High Voltage Electrophorator Model D (for "finger-printing") and Model M; their Oxygraph, a recording micro platinum cathode oximeter; three Ultraviolet Absorption meters, for proteins and nucleotides; two Fractionators; Warburgs—standard, refrigerated, and photosynthesis

models; and their Polygraphs, rectilinear ink-writing—the Macro-Polygraph incorporating two 30-inch servos, 4 pressure channels, electrocardiograph, and electroencephalograph; the 4-channel Mini-Polygraph.

THE GRAF-APSCO CO., Chicago, Ill. *(Booth 28, Aisle A)*, a leading microscope repair house, will be pleased to discuss microscope troubles affecting any make or model and the disposition of obsolete equipment. They will also show their new microscopes with exclusive features designed into the stand to keep this instrument in good working order indefinitely.

GRASON-STADLER CO., INC., West Concord, Mass. *(Booth 211, Aisle G)*, manufacturers of equipment for the experimental control of behavior, invite you to visit their exhibit, where a wide selection of equipment of automatic programming and control of experimental conditions will be displayed. Techniques for assessing the effects of drugs on behavior will be illustrated by a demonstration experiment with live animals. Technical personnel will answer questions about the application of automatic programming to various areas of biological research.

GRASS INSTRUMENT CO., Quincy, Mass. *(Booths 135, 136 & 137, Aisle E)*, will display the new UI-1 Unit Integrator, the Model 5 Polygraph, physiological preamplifiers and stimulators, kymograph Camera, strain gauges and many other instruments designed for research and teaching in electrophysiology and related fields. You are invited to consult with qualified representatives concerning your instrumentation problems and requirements.

GRUNE & STRATTON, INC., New York City *(Booth 184, Aisle F)*, will display their newest volumes, including such books as: Kato's, *Atlas of Clinical Hematology;* Wuhrmann and Wunderly's, *The Human Blood Proteins; Recent Advances in Biological Psychiatry*, volume II, edited by Wortis; *Clinical Cardiopulmonary Physiology* (2nd revised and enlarged edition), edited by Gordon *et al.; Clinical Endocrinology*, edited by Astwood; *Visual Aids in Cardiologic Diagnosis and Treatment;* Weiner's *Advances in Blood Grouping;* and Thannhauser's *Lipidoses.*

WILLIAM. J. HACKER & CO., INC., West Caldwell, N. J. *(Booth 68A, Aisle B)*. In addition to the Reichert research and laboratory microscopes, they will demonstrate some of the very recent developments of Reichert in the fields of phase and "anoptral" contrast and fluorescence microscopy, including a new high aperture turret condenser enabling instant and convenient comparison of both contrast techniques at maximum resolutions. A new Reichert condenser and special objectives for Phase Contrast Fluorescence Microscopy will also be shown.

HARFORD METAL PRODUCTS, INC., Aberdeen, Md. *(Booth 214, Aisle G)*, will display animal cages, racks and feeders, culture-tube racks and baskets, Petri dish cans, pipette cans, laboratory carts, glassware handling systems, and other items custom-designed by Lab-Crafts, Inc., specialists in metal products for biological laboratories. A complete line of cages for all species normally used is available. Their exhibit will feature cages for the smaller species.

HARSHAW SCIENTIFIC, Philadelphia, Pa. *(Booths 23, 24 & 25, Aisle A)*, will exhibit a variety of manual and recording spectrophotometers for the ultraviolet, visible and near infrared spectrums. Products manufactured by Beckman, Coleman, Zeiss, and Bausch & Lomb will be available for demonstration. In addition pH equipment covering performance ranges and standard analytical micro and recording balances will also be shown.

HARTMAN-LEDDON COMPANY, Philadelphia, Pa. *(Booth 225, Aisle A)*, offers a comprehensive line of chemical reagents, biological stains and staining solutions. Most of the commonly employel stains are offered in Parstains packaging. Parstains offer ten vials of preweighed dye material for quick, convenient preparation of most of the staining solutions in common use. Other products such as their Synthetic Resin, Embedding Medium and Fluorescence Mountant will also be featured.

HARVARD APPARATUS CO., INC., Dover, Mass. *(Booths 178 & 179, Aisle F)*, will exhibit their line of apparatus designed for research and teaching in physiology and allied sciences. A complete line of pumps, including pumps for respiration, infusion and withdrawal, as well as the continuous duty peristaltic pumps, and new items, including a respiration pump especially designed for the ventilation of very small mammals, a nerve conduction chamber and a semi-micro manipulator clamp will be shown.

HEINICKE INSTRUMENTS CO., Hollywood, Fla. *(Booth 32D, Aisle B)*, will display a working exhibit of laboratory glassware and cage washers, with the latest improvements in their famous Washers, based on the patented combination jet-ultrasonic action, obsoleting any other approach, and guaranteeing chemical cleanliness with the faultless removal of autoclaved proteins, tissue cultures, blood, distillates, tars and precipitates.

PAUL B. HOEBER, INC., New York City *(Booth 51, Aisle B)*. Previews of forthcoming books on hand: Moon's *The Adrenal Cortex;* Parker's *Methods of Tissue Culture* (3rd ed.); Jolliffe's *Clinical Nutrition* (2nd ed.); Bliss' *Genetics of Behavior*, and Burgemeister's *Psychological Techniques in Neurological Diagnosis.* Recent books on display: McManus & Mowry's *Staining Methods;* Rebuck's *The Lymphocyte and Lymphocytic Tissue*, and Williams' *Clinical Applications of Cardiopulmonary Physiology.* They also publish "The American Journal of Pathology" and "Clinical Chemistry."

INDUSTRIAL SYSTEMS COMPANY, Matawan, N. J. *(Booth 10, Aisle A)*, has designed and constructed many laboratory glassware and animal cage washing machines that are in use in many of the foremost laboratories of the world. Their Model GW-16 is a small but highly efficient stainless steel laboratory glassware washing machine, which will serve the needs of the average-size laboratory and supplement requirements of larger establishments.

INSTRUMENTATION ASSOCIATES, INC., New York City *(Booths 98, 99, 100 & 101, Aisle C)*, will display cardiopulmonary equipment including spirometers, pneumotachographs, rapid gas analysis for O_2, CO_2, HE and CO, using thermal conductivity and infrared gas analyzers; blood pH equipment; intracardiac pressure MSE; ultrasonic distintegrators Models 60W and 500W; and a continuous basket-type high-speed separator; freeze drying equipment; laboratory and respiratory gas meters; ergometers and treadmills; thermistor thermometer, and instruments for vasograph technique; Bird Respirator IPPB.

INSTRUMENTATION LABORATORY, INC., Boston, Mass. *(Booth 213, Aisle G)*, will exhibit a direct reading research system to measure pH, pCO_2, and pO_2; a direct reading clinical system to measure pH, pCO_2, pO_2, or O_2 saturation; a direct reading pH-mV meter with water bath and a system for monitoring A-V O_2 saturation during open-heart surgery.

INSTRUMENTS PUBLISHING CO., Pittsburgh, Pa. *(Booth 228, Aisle A)*, will display "Medical Electronics News," "Instruments and Control Systems," "Instrument & Apparatus News" and "Military Systems Design" publications. Representatives will be on hand to discuss their publications with you.

INTERNATIONAL EQUIPMENT CO., Boston, Mass. *(Booths 68C & D, Aisle C)*, will feature an exciting new concept in high-speed continuous flow separation, a new large capacity ultra high-speed refrigerated vacuum centrifuge and a Microtome-Cryostat combination which offers a new concept in frozen

sectioning techniques. Also on display will be their time-tested general line of centrifuges and accessories including versatile refrigerated, floor, and table models.

INTERSCIENCE PUBLISHERS, INC., New York City *(Booth 7, Aisle A)*, will exhibit their books and journals in biochemistry and related subjects, featuring advance material on D. Glick's *Quantitative Chemical Techniques of Histo- and Cytochemistry* and new volumes in his *Methods of Biochemical Analysis;* F. Nord's *Advances in Enzymology;* new two-volume edition of Smith's *Chromatographic Techniques;* W. C. Boyd's new book, *Introduction to Immunochemical Specificity;* and the first two volumes of a new project, *Organic Electronic Spectral Data.*

ISOTOPES SPECIALTIES COMPANY, Burbank, Calif. *(Booth 138, Aisle E).* A package service including compounds labeled with non-radioactive isotopes C-13, N-15, and D-2, plus analysis of biological samples resulting from use of these materials in bioassay or tracing techniques has just been added to their line of high purity radioactive labeled compounds.

JARRELL-ASH COMPANY, Newtonville, Mass. *(Booth 227, Aisle A)*, will feature their Modular Chromatograph; GLC-6 Chromatograph; Dissolved Oxygen Analyzer and B.O.D. Electrode; Galvanek-Morrison Fluorometer for Uranium, Beryllium and Selenium Analysis and their Microfocus X-Ray Diffraction Generator. Pye Argon Chromatograph; Servomet, Electronic Metal Planer; Yanagimoto Polarograph; Von Der Hyde X-Ray Cameras, and the complete line of Ionization Detectors will also be shown.

KEITHLEY INSTRUMENTS, INC., Cleveland, Ohio, *(Booth 217, Aisle G)*, will exhibit new instruments: Model 151 Microvoltmeter, Model 149 Milli-microvoltmeter; Model 415 Micro-microammeter; two new low-cost Electrometers; Model 515 Megohm Bridge; Model 240A 0–1000 volt Power Supply; also standard instruments: Electrometers; Micro-microammeters; Microvoltmeter; DC and AC Amplifiers; Megohmmeters; Power Supplies, and Milliohmmeters.

KEYSTONE PLASTICS COMPANY, Media, Pa. *(Booths 159 & 160, Aisle F)*, originators and manufacturers of the modern, efficient and time-saving laboratory equipment, will display the multi-purpose metabolism cages (e.g. trace-metal testing, etc.); newest type of inert metal feeders—no spilling or wasting food; transparent, non-breakable autoclavable cages; disposable cages; completely automatic watering systems; aluminum cages; steel cages, and numerous plastic animal cages for specialized uses.

KIMBLE GLASS CO., Toledo, Ohio *(Booths 144A & B, Aisle E)*, will display their expanding line of laboratory glassware having stopcocks with Teflon Plugs, square volumetric flasks, and Kimax boiling flasks. Clinical apparatus will include Kimax pipettes, centrifuge tubes (standard and heavy duty), and culture and test tubes.

KONTES GLASS COMPANY, Vineland, N. J. *(Booths 112 & 113, Aisle D)*, will demonstrate their Tissue Grinders, featuring the Duall homogenizer. Other items to be displayed are culture flasks, volumetric flasks and various styles of pipettes. Of special interest to biochemists will be the Bantamware Kit, with its many new items for 1961. Ask their representatives for the Catalog BW-2.

DAVID KOPF INSTRUMENTS, Tujunga, Calif. *(Booth 195, Aisle G)*, will feature a complete line of animal stereotaxic instruments, including one of lightweight aluminum, a new dog stereotaxic instrument, a deep cut-a-way instrument, a rat stereotaxic instrument, and a standard instrument with a variey of animal adaptors. Highlighted will be the new primate behavior chair.

LABASCO, INC., Lombard, Ill. *(Booth 224, Aisle A)*, is a cooperative organization of six separate laboratory supply houses founded to provide greater customer service. Exhibited will be their line of lab clamps, furniture, Structo-Frame Supports, new laboratory burner and the latest apparatus and equipment of general interest.

LABLINE, INC., Chicago, Ill. *(Booth 75, Aisle C)*, will exhibit several new laboratory items, plus standard items incorporating improvements: Shaking Bath for Controlled Shaking and Temperatures; CO_2 Incubator for cloning single cells; new Size 1 Centrifuge and Hematocrit Centrifuge; S.I.U. Disposable Mouse Cages; Sterilizers, Stirrers, Incubators, Baths, and Chromatographic Apparatus for Research and Control Laboratories.

ARTHUR S. LaPINE & COMPANY, Chicago, Ill. *(Booth 148, Aisle E)*, will display Holsi Microchemical Apparatus; Leybold Atom Models; Leybold Lattice Models; Leybold Atom Vacuum Pumps; Cahn Recording Electrobalance; Collectochrom; Spectrophotometer DB and DK_2; Gas Chromatograph; Clinac Pipetter; their clamps and other scientific specialties will also be shown.

LEA & FEBIGER, Philadelphia, Pa. *(Booth 118, Aisle D)*, will feature: Boyd, *Textbook of Pathology;* Buchanan, *Functional Neuro-Anatomy;* Soffer, Dorfman and Gabrilove, *The Human Adrenal Gland;* Wintrobe, *Clinical Hematology;* Collins, *Fundamentals of Nerve Blocking;* Burch and Windsor, *Primer of Electrocardiography;* Finerty and Cowdry, *Textbook of Histology;* Wohl and Goodhart, *Nutrition in Health and Disease;* Grollman, *Pharmacology and Therapeutics; Gray's Anatomy;* Goldberger, *Water, Electrolyte and Acid Base Syndromes;* Rasch and Burke, *Kinesiology and Applied Anatomy;* and Smith and Jones, *Veterinary Pathology.*

LEHIGH VALLEY ELECTRONICS, Allentown, Pa. *(Booth 50, Aisle B)*, furnishes stock and custom apparatus for use in the research activities of Drug Companies, Universities, Hospitals, and Private Institutions by psychologists, pharmacologists, physiologists, biologists, and others interested in behavioral studies, drug screening, and other experimentation. They also furnish a full line of test chambers, restraining apparatus, activity devices, associated control and recording apparatus, and develop, design, and fabricate apparatus both mechanical and electrical to meet special requirements and custom needs.

E. LEITZ, INC., New York City *(Booths 77 & 78, Aisle C)*, will feature new models of the following Fernandez Moran Ultra-Microtome, Micromanipulator with improved Inclined-Angle Micro Injection Method, and Panphot Photomicrographic Microscope with Plano Objectives; also Ortholux-Uam-Aristophot Research Photographic Microscope with Polariod 4″ x 5″ Accessories, Inverted Binocular Tissue Culture Microscope, Labolux Phase Microscope, Dialux-Pol Research Polarizing Microscope, SM Fluorescence Microscope, Stereoscopic Microscope and Binocular Magnifiers.

LINBRO CHEMICAL CO., INC., New Haven, Conn. *(Booth 56, Aisle B)*, will exhibit their new Micro Disposo-Tray, a disposable plastic tray with 240 cups of .25 ml, which lends itself to all types of micro work, including C.F. tests. Available in both clear and white. The economy and advantages of Disposo-Trays in routine laboratory procedure have been established. 7X for washing by hand and 7X O-Matic for use in ultrasonic and mechanical washers will be displayed.

J. B. LIPPINCOTT COMPANY, Philadelphia, Pa. *(Booth 125, Aisle E)*, presents, for your approval, a display of professional books and journals geared to the latest and most important trends in current medicine and surgery. These publications, written and edited by men active in clinical fields and teaching, are a continuation of more than 100 years of traditionally significant publishing.

LIPSHAW MANUFACTURING CO., Detroit, Mich. *(Booth 201, Aisle G)*, will exhibit many items of special interest to the pathologist and the tissue technologist. The Automatic Tissue Processing Equipment, Paraffin Handling, Embedding Equipment, Embedding Molds, and dozens of other items with catalogues and complete literature will be arranged for your convenience. Several new items will also be shown among which is their new Microtome-Cryostat Combination and other refrigerating apparatus.

L K B INSTRUMENTS, INC., Washington, D. C. *(Booths 190 & 191, Aisle G)*, will display Ultrotome Ultramicrotome, Uvicord Ultraviolet Absorptiometer, RadiRac Fraction Collector, Recorder, stream and batch Conductivity Bridges, Preparative Paper Chromatography, Paper Electrophoresis Equipment, and Mini-Flow Micropump. Demonstrations will be set up of ultarthin tissue sectioning and a system of UV identification of streaming effluent with automatic fluid collection, recording, and event-marking. New accessories and instruments will be introduced.

LITTLE, BROWN AND COMPANY, Boston, Mass. *(Booth 38, Aisle B)*, will have many impressive books including Antoniades, *Hormones in Human Plasma;* Pearsey, *Histochemistry;* Henry Ford Hospital Symposium, *Biology of Pyelonephritis;* Davson, *A Textbook of General Physiology;* Hayhoe, *Leukaemia;* and Annino, *Clinical Chemistry, Principles & Procedures* (2nd ed.). Other new and interesting books are Castleman & Dudley, *CPC's of the MGH;* MacMahon, Pugh & Ipsen, *Epidemiologic Methods;* Peery & Miller, *Pathology;* Engley, *Medical Microbiology;* and Lawrence & Moulton, *Clinical Pharmacology;* and all of the Ciba Foundation books.

THE LONDON COMPANY (formerly WELWYN INTERNATIONAL, INC.), Cleveland, Ohio *(Booths 8 & 9, Aisle A)*, will exhibit equipment by Radiometer of Copenhagen, featuring a new motor-driven automatic burette for micro titrations, a new circulating water thermostat with integral vacuum pump, the transistorized model pHM4 pH meter, their latest micro electrode chain for blood pH, and the Astrup Micro Equipment for complete acid-base determinations on micro volumes of blood.

LOURDES INSTRUMENT CORP., Brooklyn, N. Y. *(Booths 73 & 74, Aisle C)*, will display a variety of superspeed centrifuges, refrigerated and nonrefrigerated. New centrifuge models feature automatic rotor acceleration and electro-dynamic brake. Also on display will be a new Vacuum Refigerated Ultra-Superspeed Centrifuge, the Model VA-2, Vacu-Fuge. Three new continuous-flow centrifuge rotors offer unsurpassed design with collection in removable polyethylene liners.

THE MACMILLAN COMPANY, New York City *(Booths 90 & 91, Aisle C)*, will display a selection from their extensive list of scientific publications. Among the more recent books will be Brazier, *The Electrical Activity of the Nervous System* (2nd ed.); Brazier, *The Electrical Activity of the Brain;* and Nightinggale, *Physics and Electronics in Physical Medicine.* Be sure to see advance proofs of the new 3rd edition of West-Todd, *Textbook of Biochemistry.*

THE MARK COMPANY, Randolph, Mass. *(Booth 5, Aisle A)*, will feature the Scholander Microvolumetric Respirometer incorporating a 10 station unit with oscillation magnitude and frequency control and temperature control of 0.5°C. without insulation; the Scholander Micro Gasometric Water Analyzer; related biochemical apparatus; an advanced and simplified version of the Mark-McCabe Pump for physiological studies; and their Low Flow Dual DeBakey Pump with precise flow control for laboratory and physiological use.

MEINECKE & COMPANY, New York City *(Booth 155, Aisle F)*, will display Haemo-Sol the truly outstanding chemical preparation specifically designed for the cleaning of scientific apparatus such as laboratory glassware, syringes, etc. Haemo-Sol is entirely free-rinsing, leaving no film or residue. Haemo-Sol prevents etching on glassware. Approved for tissue-culture work. The ideal preparation for use with a Flame Photometer. Haemo-Sol NS, the low sudsing formula for mechanical washers.

METALWASH MACHINERY CORPORATION, Elizabeth, N. J. *(Booths 58A & 58B, Aisle B)*, will introduce a new laboratory glassware washer, Model RT-19, which has been developed for the small laboratory; it features stainless-steel construction, a powered rotary table, and automatic controls. An animal cage washer, Model RT-42, will also be exhibited.

METTLER INSTRUMENT CORPORATION, Princeton, N. J. *(Booth 37, Aisle B)*, manufactures a full line of semi-automatic direct reading balances. There are more than 60 models to choose from, including Ultra-Micro, Micro, Semi-Micro, Macro, Multi-Purpose, and precision balances plus a number of special purpose balances. A representative sample of these balances will be exhibited. Specialists will be available to assist you in any weighing problems.

MICROBIOLOGICAL ASSOCIATES, INC., Bethesda, Md. *(Booth 114, Aisles E & D)*, will feature cell strains cultivated in tissue culture, media, viral diagnostic reagents, and fluorescein conjugated antiserum globulins. New Biological Teaching Aids, showing the application of tissue culture to the teaching of cellular biology, will be exhibited. Cell cultures and slides will be available for microscopic examination. New catalogues and technical literature will be distributed.

MICRO-METRIC INSTRUMENT CO., Cleveland, Ohio *(Booth 193, Aisle G)*, will show microanalytical instrumentation designed to speed data collection and reduce the time consumed in routine laboratory duties. Among the various items exhibited will be the Micro-Gasometer, Syringe Microburet, Warburg Calibrator, Micro Screw Syringes, Magnetic Stirrer, Micro Test-Tube Stirrer, Cartesian Diver Respirometer and Filler, Pipette Washer and Drier, and Automatic Pickup Tweezers.

MILLIPORE FILTER CORP., Bedford, Mass. *(Booth 21, Aisle A)*. Technical representatives will be present to discuss and demonstrate the application of their filters in a variety of fields. Chief among these are the fields of exfoliative cytology, sterile filtration of tissue culture media and other biologicals, and general microbiology. New MF® developments in sampling methods for airborne bacteria will also be of interest to many in attendance.

MINNEAPOLIS-HONEYWELL REGULATOR CO., Heiland Div., Denver, Colo. *(Booth 3, Aisle A)*, will display console-mounted systems for measuring and recording a wide range of physiological functions. Systems feature modular, plug-in units and are furnished with transducers, inputs and amplifiers, power supplies, and galvanometers. Recording equipment includes direct-recording Visicorder oscillograph (for immediate readout of analog curves) and/or magnetic tape. Their Body Function Recorder monitors and records pulse rate, blood pressure, respiration rate, and body temperature.

MNEMOTRON CORPORATION, Spring Valley, N. Y. *(Booth 210, Aisle G)*, will exhibit new multi-channel precision analog data tape-recording systems for recording all physiological variables with frequency response form DC to 5KC, accuracy of 0.2%, inter-channel cross-talk below 70db, tape-speed ratios up to 16:1 for time expansion and contraction, two to fourteen channel systems; their line digital average response computer CAT Mark II for precise measurement of evoked potentials in the brain, average retinograms, and averaging of other biological variables.

THE C. V. MOSBY COMPANY, St. Louis, Mo. *(Booths 128 & 129, Aisle E).* New knowledge, ideas, research and technique—all are in their books for the biological sciences. Look over these books at your leisure and convenience. If you wish assistance, representatives will be happy to discuss any book with you.

THE NALGE CO., INC., Rochester, N. Y. *(Booth 192, Aisle G),* will exhibit a complete line of laboratory apparatus for use in medical, educational, and industrial laboratories. Nalgene lab ware is fabricated from conventional or high-pressure polyethylene, linear or low-pressure polyethylene and polypropylene. A working model will demonstrate their Automatic Pipet Rinser in use. Other products to be shown include beakers, bottles, carboys, centrifuge and test tubes, cylinders, flasks, funnels, tubings.

NATIONAL ANILINE DIVISION OF ALLIED CHEMICAL CORP., New York City *(Booth 215, Aisle G).* The Biological Stains Department will present a new display which features applications of the widely used biological stains sold by them. The display also will call attention to the other types of products offered which include pH indicators, oxidation-reduction indicators, diazo salts, and staining solutions.

NATIONAL INSTRUMENT LABORATORIES, INC., Washington, D. C. *(Booths 163 & 164, Aisle F),* will show instruments and exclusively distributed apparatus: the Chromoscan scanning integrator for chromatography and all electrophoretic media; J.L.C. Recording Microdensitometer; Tesla Electron Microscope; Agafor II Immuno-Micro Electrophoresis Apparatus; Pearse-SLEE Refrigerated Microtome; their Flame Photometer and Photoelectric Crop-Counter; a new micro Van Slyke Apparatus and Radiometer pH equipment.

NEW BRUNSWICK SCIENTIFIC CO., INC., New Brunswick, N. J. *(Booths 144C & D, Aisle F),* will exhibit Refrigerated Incubator Shaker with a 10-cubic-ft. chamber for growing static and agitated cultures simultaneously; Batch Freeze Dryer with 6-liter ice capacity; Variable Speed Tubing Pump for metering very minute to very large volumes of liquid with precision, accommodating several pieces of tubing simultaneously; Continuous Fermentor for feeding and harvesting aerobic and anaerobic cultures; Automatic pH Control System with recorder and Indicator-Controller.

NEW ENGLAND NUCLEAR CORP, Boston, Mass. *(Booth 96, Aisles C & D),* specializes in the synthesis of radioactive chemicals for research purposes. Over 400 C^{14}, H^3, P^{32} and S^{35} labeled compounds are stocked for immediate shipment. Members of the technical staff will be in attendance at all times to discuss various tracer techniques and procedures and any specific requirements of visiting scientists.

NUCLEAR-CHICAGO CORPORATION, Des Plaines, Ill. *(Booth 115, Aisles D & E),* will exhibit a complete line of radioactivity detection and measuring instrumentation. Featured will be new Liquid Scintillation Counting Systems, automatic sample handling instruments, radiochromatogram analyzers, electrometer systems, plus a new line of high quality pulse counting systems. Information on their extensive line of carbon-14, tritium, sulfur-35 and phosphorus-32 labeled compounds will be available.

NUCLEAR MEASUREMENTS CORP., Indianapolis, Ind. *(Booth 76, Aisle C).* Gamma Spectrometer System (GSS-1) eliminates "dark current" defect, analyzes emitters from 1 KEV to around 6 MEV, and permits direct peak comparison of emitters. Proportional Counting System (PC-3A) counts every alpha and beta emitted in 2 pi angle from prepared samples. Proportional Counter Converter (PCC-11A) converts any scaler to a proportional counting system. Well-Type Counter (WSC-1) detects low-level gamma activity in test-tube and flat-type samples.

NUCLEAR-OHIO, INC., Bay Village, Ohio *(Booth 223, Aisle G).* In addition to standard instruments of interest to experimental biologists, several new products will be exhibited, including large well scintillation detectors for whole body counting of small animals, beta spectroscopy scintillation detectors, tritium continuous flow detectors, I_{125} detectors and collimators, neutron detectors, irradiation cells, low flow pumps, remotely controlled micropipetters, cell disintegrators, and several custom-designed instruments for specific research projects.

NUCLEONIC CORPORATION OF AMERICA, Brooklyn, N. Y. *(Booth 221, Aisle G),* features nuclear measuring and detecting instruments including scalers, ratemeters, laboratory monitors, portable survey meters, and Geiger, scintillation, and proportional detectors. Technical services include Film Badge Service, Radioassays, Instrument Calibration Service. Also on display is the Thyroidometer, a unique instrument for performing thyroid uptake measurements which automatically calculates the % uptake of iodine-131.

OFFNER ELECTRONICS INC., Schiller Park, Ill. *(Booth 182, Aisle F),* will display their Type T 8-channel and Type TC 8-to-16-channel completely transistorized electroencephalographs and Type R Dynograph direct-writing oscillographs with microvolt sensitivity for d-c or a-c signals and with extreme input versatility through the use of the Type 9800 series input couplers; and in addition, the differential d-c amplifiers and accessories for convenient and compact amplification of low-level signals.

OPTICA, INC., Washington, D. C. *(Booth 162, Aisle F),* will introduce their compact Atomic Absorption Analyzer, complete with monochromator and digital printer. Also shown will be their new model Double-Beam Recording Grating Spectrophotometer with integral stabilized power supply (available separately for all spectrophotometers), recorder, and optional digital readout. Also with their new models will be associated accessories for atomic absorption, spectrofluorometry, turbidity, fluorescence analysis, reflectance measurements, and flame analysis.

ORGANON INC., West Orange, N. J. *(Booth 70, Aisle B).* The exhibit presents the chemistry, pharmacology, and clinical application of a new class of steroids. Recent studies with an anabolic steroid and progestational steroid will be displayed.

OXFORD UNIVERSITY PRESS, New York City *(Booth 153, Aisle F),* features a variety of new publications of special interest: Beecher, *Measurement of Subjective Responses;* Christensen, *Diagnostic Biochemistry;* DuBois and Geiling, *Textbook of Toxicology;* Florey, *Miscellaneous Antibiotics* (vol. IV); Smith *et al., Principles of Human Pathology;* Nemiah, *Foundations of Psychopathology;* Chafetz and Demone, *Alcoholism and Society;* Woodburne, *Essentials of Human Anatomy* and *A Guide to Dissection in Gross Anatomy.*

PABST LABORATORIES, Milwaukee, Wisc. *(Booth 158, Aisle F),* have extended their line of highly purified ribonucleotides and coenzymes to include the biochemically important deoxyribonucleoside-5′ mono and triphosphates. Brochures on specifications and ultraviolet absorption spectra of these and other new products and their highly prized circular entitled "Ultraviolet Absorption Spactra of 5′-Ribonucleotides" will be available. Technicians will discuss requirements for especially purified nucleosides, nucleotides, coenzymes and related products including both ribo- and deoxyriboderivatives.

PACKARD INSTRUMENT COMPANY, INC., La Grange, Ill. *(Booth 97, Aisles C & D).* Transistorized Tri-Carb Liquid Scintillation Spectrometers will be counting, printing, and tape-punching data on low-energy beta-emitting samples. The Tri-Carb Flow Monitor enabling measurement of radioactivity in liquid or gas streams; the transistorized Auto-Gamma Spectrom-

eter System; the Radiochromatogram Scanner; transistorized log-linear ratemeters; manual models of scalers and gamma spectrometers, and small animal counter will also be shown.

PAXTON PROCESSING CO., INC., Paxton, Ill. *(Booth 71, Aisle B)*, will exhibit San-I-Cel Laboratory Animal Bedding, a manufactured bedding for research animals, designed for and tailored to the exacting requirements of researchers for uniform environmental conditions. Regular and Deodor Grades will be displayed, as well as the two types of packages, Standard and Duo Pack, to provide the greatest protection.

PEL-FREEZ RABBIT MEAT CO., Rogers, Ark. *(Booth 226, Aisle A)*, will display Rabbit Biological Products—quick frozen, domestic rabbit by-products, from a major supplier: any part of the rabbit, including: adrenals, bone marrow, brains, embryos, eyes, hearts, kidneys, livers, lungs, muscle tissue, pancreas, pituitaries, serum, spleens, testicles, thyroids, urine or any other product requested. Breeds used are 85% New Zealand Whites, 10% Californians, balance various mixed medium weight breeds.

PENTEX INCORPORATED, Kankakee, Ill. *(Booth 41, Aisle B)*, will feature blood protein fractions and special protein isolation. If you have an isolation problem or one on animal feeding and testing, their representative will be available for consultation.

PERGAMON PRESS INC., New York City *(Booth 45, Aisle B)*, an international Scientific Publishing House, publisher to the International Union of Biochemistry and many leading international and national scientific organizations; publishers of over 100 important Scientific Periodicals and Serial Publications. Representatives will be available to discuss any publication problems you may have.

PHIPPS & BIRD, INC., Richmond, Va. *(Booth 43, Aisle B)*, will present equipment of interest to teachers and investigators. In addition to standard equipment (kymographs, stimulators, syringe drivers, etc.), there will be new items, including infusion and perfusion pumps, an improved cardiotachometer, respiration pump for small animals, and other items.

PHOENIX PRECISION INSTRUMENT CO., Philadelphia, Pa. *(Booth 94, Aisles C & D)*. Analyses of synthetic amino-acid mixtures are demonstrated with the new Model K-8000 Automatic Recording Amino Acid Analyzer. Additional displays include the new Brice-Phoenix Universal Light Scattering Photometer, Visual and Automatic Recording Differential Refractometers, and the latest models of the new Sinclair-Phoenix Aerosol and Dust Monitor Unit.

PHOTOVOLT CORP., New York City *(Booth 185, Aisle G)*, will feature their complete lines of Densitometers for electrophoresis and chromatography. The user can purchase either the various parts of the building-block equipment or the single-unit Automatic Recording Densitometer "Densicord." Also exhibited will be the Linear/Log Recorder Varicord 43; Lumetron Colorimeter; their Blood pH Meter; and the Macro, Micro and Ultramicro Fluorescence Meter 540.

PICKER X-RAY CORPORATION, White Plains, N. Y. *(Booths 175 & 176, Aisle F)*. The Nuclear Division will exhibit an Automatic Windowless Chromatogram Scanning System, complete Automatic Sample Changing System, Nuclear Training Instruments, a new Logarithmic Ratemeter, and a wide variety of other nuclear instruments and accessories.

PORTER MATHEWS COMPANY, INC., Philadelphia, Pa. *(Booths 22A & B, Aisle A)*. America's pioneer manufacturers announce the opening of their Princeton, New Jersey, plant on May 1. A mammoth book with moving pages, displaying both custom and deluxe small animal cages and laboratory equipment, will be shown. Their two new models are featured: a modern, durable cat cage, containing private service compartment and, an exclusive, a rat restrainer. A colorful new catalog is also available.

PRECISION SCIENTIFIC CO., Chicago, Ill. *(Booth 196, Aisle G)*, will exhibit a number of new developments, including a complete new Shaker Bath line, a new Micro-Serological Bath, a new Warburg Apparatus, and the latest development—a new blood-gas Chromatograph. A Dubnoff Metabolic Shaking Incubator and a High-Speed Chromatograph featuring a new feed system will also be shown.

PROFESSIONAL TAPE COMPANY, INC., Riverside, Ill. *(Booth 72, Aisle B)*, will display pressure-sensitive Time Tape and Time Labels; TSI Labels and TSI Tape (Time Sterile Indicator) show "Sterile" after sterilizing for identifying condition of glassware, individually or contained in baskets or cannisters, providing a new lab procedure positively identifying "Sterile" from contaminated, and Time Microscopic Slide Labels in standard or tissue high form to satisfy all microscopic slide work. Also available imprinted.

QUARACELL PRODUCTS, INC., New York City *(Booth 4, Aisle A)*. After repeated detailed experiments, they have succeeded in developing the fusing (not cementing) of High Precision Quartz Cells for commercial spectrophotometers, showing an unlimited resistance to acids. These cells are matched in sets of two, four, six, to the extent that they file optical data on the transmission characteristics of every matched cell sold. Should an additional single cell for replacement be needed, it may be obtained prematched to the previously purchased cells.

RADIATION COUNTER LABORATORIES, INC., Skokie, Ill. *(Booth 167, Aisle F)*. A 512 Channel Transistorized Pulse-Height Analyzer, which may be also operated as a Multi-Channel Scaler, both with Automatic Print-out, will be displayed, together with a transistorized printing Scaler and single channel pulse-height analyzer. Displays of Whole Body Counters, Neutron Activators and a complete line of vacuum tube laboratory equipment, along with the associated glassware and specialized radiation counters.

RALSTON PURINA COMPANY, St. Louis, Mo. *(Booth 177 Aisle F)*, has been designed to give animal experimenters information about their Laboratory Chows. Samples of the various products will be on display and their Specialists in Laboratory Animal Nutrition will be in attendance. Visitors are cordially invited.

RESEARCH SPECIALTIES CO., Richmond, Calif. *(Booths 122, 123 & 124, Aisle E)*, which manufactures chromatography equipment and other specialized apparatus for biochemical laboratories, will display modular systems for gas chromatography; full line of cabinets, jar units, and accessories for paper chromatography; automatic chemical-analysis systems—Robot Chemist, recording flow photometer, and other modules; and many instruments for general laboratory use—Multi-Block Tube Heaters, Water Bath Shaker, Zone Melter, Lambda-Pettes (precision micropipettes).

O. C. RUDOLPH & SONS, INC., Caldwell, N. J. *(Booth 200, Aisle G)*, will exhibit Polarimeters for optical rotations at one wavelength (Utility Polarimeter 0.1°, Routine Polarimeter 0.02°, Precision Polarimeter 0.01°, High Precision Polarimeter .001°); Manual Photoelectric Spectropolarimeter for optical rotatory dispersion measurements at various wavelengths; Photoelectric Ellipsometer for film measurements; Monochromator with fused silica optics for the visible and ultraviolet spectrum; Xenon Light Source, a powerful continuous point source for the 230 to 750 $m\mu$ region.

SANBORN COMPANY, Waltham, Mass. *(Booths 139 & 140, Aisle E)*, will display a selection of instruments for biophysical research—some in simulated operation—to aid understanding of

function and operating features. Of interest to clinicians and research workers, equipment includes Recording Systems (single- and multi-channel, direct-writing, photographic and tape), Monitoring Oscilloscopes, Transducers (pressures, temperature, etc.), and new Preamplifiers, which permit wide range of physiologic applications. Qualified representatives will be on hand to discuss technical problems.

SANDOZ PHARMACEUTICALS, Hanover, N. J. *(Booths 29 & 30, Aisle A).* In an effort to define the chemical constitution of Bradykinin, several octapeptides were synthesized, but none of them proved pharmacologically identical in action with natural Bradykinin. Finally an open-chain nonapeptide was synthesized by Boissonnas and co-workers in the laboratories and was found to possess all properties of natural purified trypsin Bradykinin. The pharmacological testing of this synthetic product is described.

E. H. SARGENT AND COMPANY, Springfield, N. J. *(Booth 31, Aisle A),* will introduce their new Concentration Comparator for the determination of chloride in blood serum; the new Automatic-Recording Titrator; their Model XV Polarograph; and the Beckman Model DB Spectrophotometer with their SR Recorder.

W. B. SAUNDERS COMPANY, Philadelphia, Pa. *(Booths 102 & 103, Aisle D).* Representatives invite you to examine the many new and revised editions of books on display. New publications in pathology, pharmacology, human physiology, clinical physiology, respiration, cardiology, biochemistry, comparative physiology, chemical genetics, and vertebrate biology will also be shown.

SCHAAR AND COMPANY, Chicago, Ill. *(Booth 183, Aisle F).* New items for chromatography, curtain electrophoresis, fast reading one-pan balances, line operated pH meters, direct reading flame photometer, high-vacuum rotating film evaporators, new fraction collector and 1 mv. and 10 mv. logarithmic recorders. Their Lab-Oratory Buying Guide, Chromatography catalog, and the new 1,000-page Laboratory Supplier will be distributed.

SCHUCO SCIENTIFIC, New York City. *(Booth 216, Aisle G),* will exhibit the Si-Ro-Flex Ultramicrotome for ultra-thin sectioning of electron microscopy material, Volutec chromatography and electrophoresis spray reagents, Hetotherm circulating thermostats and pumps, Automatic Pipette for dispensing repetitive amounts of solution with a turn of the stopcock, the new Ugine Eyraud Thermogravimetric Balance complete with 0.1 mg sensitivity analytical balance and furnace to 1,000° C, −70 low-temperature thermostat bath, and other equipment.

SCHWARZ BIORESEARCH, INC., Mount Vernon, N. Y. *(Booth 79, Aisle C),* producers of biochemicals, radiochemicals and pharmaceuticals will display a new series of nucleotide-nucleoside kits and biochemicals and radiochemicals, and Thiogel, a thiolated gelatin made exclusively by them. Members of the technical staff will discuss specialized problems with visitors, and printed material will be available.

SCHWARZER COMPANY, Watertown, Mass. *(Booth 52, Aisle B).* After the 10-year rush of the indirect-writing "Cardioscript S" throughout the world, the newly designed models, "Cardioscript St," again are revolutionary for the years to come. A staff of engineers will demonstrate the many fundamental advancements and real advantages, of interest to clinicians and research workers alike. Also on display will be their new large-screen high-frequency Oscilloscope for up to 10 plug-in channels with individual beams.

SCIENTIFIC GLASS APPARATUS CO., INC., Bloomfield, N.J. *(Booth 40, Aisle B),* will exhibit the new exclusive Burd Watcher, Precision Shaking Bath, Precision Hot Plate, Precision Dubnoff Shaker, Van-Slyke-Neill Blood Gas Apparatus, Accu-Red Buret, Filter Apparatus Morton, Digestion Tubes, Corning Teflon Stopcocks, Gyco Teflon Stopcocks, and their Microware, plus many new items for the biologist.

SCIENTIFIC INDUSTRIES, INC., Springfield, Mass. *(Booths 202, 203 & 204, Aisle G).* Their expanded line for laboratories includes several Vortex tube mixers, small volume emulsifiers, rotostirrers, rotator and new attachments. The automatic pipette now has 8 sizes from 10 microliters to 10 cc. The Natelson Microgasometer is working with shaker, light, and special reagents. You can try the Natelson pH Meter with anaerobic, temperature controlled blood electrodes and learn about a major advance in paper electrophoresis.

SCIENTIFIC INSTRUMENTS, Div. of Polarad Electronics Corp., Long Island City, N. Y. *(Booth 35, Aisle A),* will exhibit an Automatic Recording Titrator—Model AT-2A; a Rotating Cylinder Viscometer—Model RV-2; and a Digital pH Meter—Model DpH-1.

SCIENTIFIC PRODUCTS, Evanston, Ill. *(Booths 88 & 89, Aisle C),* will display a new line of instrumentation to determine a variety of physiological responses in experimental animals. In addition, apparatus for both routine and research hormone-chemistry determinations will be shown. Included will be Hycel's new Semi-Micro PBI System. Among numerous other new products will be a recording Viscometer, the Lab-Vis for the investigation of viscosity and viscosity changes, and the G. K. Turner Fluorometer.

SELAS CORPORATION OF AMERICA, Dresher, Pa. *(Booth 218, Aisle G),* will display a complete line of Microporous Porcelain Filter Ware for all phases of filtration, as carried out in pharmaceutical, biological, and bacteriological laboratories; Micro-Filters for clarification, polishing, and cold sterilization of all types of injectible preparations on a production basis; and Liqui-Jectors for cleaning of steam utilized in autoclaves and the jet cleaning of laboratory glassware and apparatus.

SIGMAMOTOR, INC., Middleport, N. Y. *(Booth 207, Aisle G),* the manufacturer of various types of peristaltic action tubing pumps primarily used for pumping corrosives, blood, food, chemicals, medicines, and other products. The pump operates on a piece of resilient tubing, inert to the substance being transferred. A sign wave motion causes a vacuum of up to 22" of mercury.

IVAN SORVALL, INC., Norwalk, Conn. *(Booths 84 & 85, Aisle C),* present the Servall-Ribi Refrigerated Cell Fractionating Apparatus, developed to facilitate and expedite separation of cell wall from protoplasm to a high degree of purity; the HB-4 High-Speed, Swinging-Bucket Rotor with Density Gradient Manifold. Emphasis remains on automation, evidenced in the well-known RC-2 Automatic Refrigerated Centrifuge, SS-3 Push-button Superspeed Centrifuge, Szent-Gyorgyi & Blum Continuous Flow System, which will be shown in operation, along with other Centrifuges, Ultra-Microtomes, Homogenizers, etc.

E. R. SQUIBB & SONS, New York City *(Booth 1, Aisle A),* has long been a leader in development of new therapeutic agents for prevention and treatment of disease. The results of their diligent research are available to the medical profession in new products or improvements in products already marketed. They will be pleased to present up-to-date information on these advances for your consideration.

A. E. STALEY MANUFACTURING CO., Decatur, Ill. *(Booths 110 & 111, Aisle D),* will exhibit Rockland Laboratory Animal Stock Diets which are species specific diets for mice, rats, guinea pigs, monkeys, dogs, and rabbits. The selection of high quality components, blended by use of ultramodern mixing equipment and continuous analysis in production, assures uniformity for controlled laboratory feeding. Diets are free of antibiotic activ-

ity, diethylstilbestrol contamination, and pathogenic organisms when manufactured and are available in all principal cities and throughout the world through Staley International.

C. H. STOELTING COMPANY, Chicago, Ill. *(Booth 68B, Aisle B)*, will display the Swiss-made "Testmatic" Analytical Laboratory Balance, Multi-Channel Oscillograph, Stereotaxic Instruments, Micromanipulators and modular electronic devices for biophysical laboratories; also a line of low-cost Strip Chart Recorders, such as the Millivolt Servo-Recorder, Multi-Events Recorder, and a D'Arsonval type of Milliampere Recorder.

TECHNICAL ASSOCIATES, Burbank, Calif. *(Booth 2, Aisle A)*, designers and manufacturers of a standard line and special custom requirements of radiation-measurement and nuclear-research instruments, will show: Automatic Sample Changers, Gas Flow Counter Systems, Low Level Beta Systems, Scintillation Detectors, Survey Instruments, Scalers, Rate Meters, Spectrometry Systems, Personnel Monitors, Linear Amplifiers, Scanners, Power Supplies, Analyzers, Spectrometers, Shields and Source Containers.

TECHNICON INSTRUMENTS CORP., Chauncey, N. Y. *(Booths 119, 120 & 121, Aisle D)*. Their four AutoAnalyzers will be operating automatically and presenting permanent, recorded results on the following procedures: for the first time, a digesting device, analyzing nitrogenous compounds; "Kjeldahls"—automatically, continuously; amino acids, resolving 21 acids or related compounds on a single 133-cm. column using the Autograd, a variable gradient device; a biochemical test. Also displayed: the Autotechnicon, Fraction Collector, and Lab-Aid Slide Filing Cabinets.

ARTHUR H. THOMAS COMPANY, Philadelphia, Pa. *(Booths 80, 81 & 82, Aisle C)*, will exhibit Recording Spectrophotometer, Recording Electrobalance, Chromatography Apparatus, Precision and Analytical Balances, new Animal and Restraining Cages, Ultrasonic Cleaning Equipment, Freeze-drying Apparatus, Electrophoresis Apparatus (including starch gel and agar gel accessories), Capillary Melting Point Apparatus, Osmometer, Bacteriological Incubator and Paraffin Oven, Recording Fluorometer, Microtome Knife Sharpener, Magnetic Stirrer and Hot Plate Attachment, Recording Densitometer, Recorders, Telethermometer, Protein Refractometer, Gas Chromatography Apparatus.

THE TORSION BALANCE COMPANY, Clifton, N. J. *(Booth 194, Aisle G)*, will feature their line of new dial reading Balances with weight loaders. Also on display will be their Electric Mortar Grinder, Flexible Glove Cabinet, Chromatographic Desalter, and Anaerobic Jar.

TRACERLAB INC., Waltham, Mass. *(Booths 131, 132 & 133, Aisle E)*. A wide variety of instruments specifically designed for biological research laboratories employing radioisotopes. These include a new automatic sample changer system, including 1" and 2" ultra thin window flow counters and cpm readout, also a new automatic low background counting system as well as an automatic liquid scintillation counting system and a wide variety of laboratory instruments.

TRI-R INSTRUMENTS, Jamaica, N. Y. *(Booth 189, Aisle G)*, will exhibit their thermistor-type thermometer with various ranges, probes, and accessories; Teflon Tissue Homogenizers with interchangeable pestles and precision bore tubes; new, low-cost, variable-speed motor-operating direct-drive or flexible-shaft homogenizing apparatus; a compact magnetic stirrer; automatic egg punch; and Airborne Infection Apparatus for the experimental infection of small animals by inhalation.

VANGUARD INSTRUMENT COMPANY, La Grange, Ill. *(Booth 17, Aisle A)*, is pleased to exhibit the Model 800 Autoscanner for chromatogram scanning of tritium, carbon-14, and other beta-emitting radioisotopes. The Autoscanner is completely transistorized, fully automatic, and features a wide range of scanning speeds. Also displayed is the completely transistorized Model 1,000 Volumatic fraction collector, representing a new concept in volumetric control. Time and drop plug-in units are also available.

THE VIRTIS CO., INC., Gardiner, N. Y. *(Booths 15 & 16, Aisle A)*. Featured and in actual operation will be the mechanically refrigerated Freeze-Mobile now available with three new vacuum chambers. The new mechanically refrigerated Condenser-Evaporator will be displayed, demonstrating the convenience of automatic refrigeration when using rotary evaporators. Other instruments on exhibit will include their "45" and "23" Hi-Speed Homogenizers, the Filtered Air Pipette Dryer, and the Extracto-Matic.

VOLK RADIOCHEMICAL CO., Chicago, Ill. *(Booth 57, Aisle B)*. The supply of isotopically labeled compounds for research and clinical use is the special function of their organization. The radiochemists in attendance will be available to discuss the general applications of labeled compounds in bio-medical research, as well as their availability in special forms to meet specific research needs. Samples of packaging for their carbon-14, deuterium, tritium, cobolt-60, iodine-131, phosphorus-32, and sulfur-35 labeled compounds will be exhibited.

GEO. H. WAHMANN MFG. CO., Baltimore, Md. *(Booths 198 & 199, Aisle G)*, will exhibit laboratory animal cages and accessories selected from their comprehensive line of laboratory animal-care equipment. Products include individual cages and racks; suspended cages for rodents, rabbits, and cats; rear draining dog cages; integrated cage systems; food and water devices; stainless drinking tubes; cage sterilizers; operating and autopsy tables; food and sawdust bins; scales; marking devices.

THE WATERS CORPORATION, Rochester, Minn. *(Booths 126 & 127, Aisle E)*. All-new instruments this year include a linear, flow-insensitive blood densitometer for dye-dilution curves; an improved, smaller nitrogen-gas analyzer; a new oximeter recording system which also can be used for blue or green dye-dilution curves; and a battery eliminator for oximeters, thermistors, cardiotachometers, etc. All equipment is restyled and reduced in size.

WILD HEERBRUGG INSTRUMENTS, INC., Port Washington, N. Y. *(Booth 36, Aisle A)*. The entire line of Swiss Microscopes and Stereomicroscopes will be on display, including attachments for Photomicrography and Cinemicrography, Phase Contrast, Darkfield, Polarization, and Ultraviolet Fluorescence. The new Binocular Camera Lucida Attachment helps you draw structural details seen at different focus levels—the ideal gadget for the biological illustrator. You are invited to bring your slides along and test their equipment.

JOHN WILEY AND SONS, INC., New York City *(Booth 69, Aisle B)*, will display new and recent titles in fields of interest to you. Of particular interest is the three-volume work by Greenstein and Winitz, *Chemistry of Amino Acids*, which was just published in January. Their representatives look forward to showing this and other pertinent titles to you.

WILKENS-ANDERSON COMPANY, Chicago, Ill. *(Booth 39, Aisle B)*, will exhibit: Waco Lo-Temp Refrigerated Baths, for operation to —10°C with 0.01° control; Waco laboratory stirrers and stirrer-hotplates; Barton molecular models; Cahn recording balance; Unicam visible and ultra-violet range spectrophotometers.

WILL CORPORATION, Rochester, N. Y. *(Booth 46, Aisle B)*, will show their Ultrasonic Cell Fracturing System, Laboratory Oven, Gyrathe·m Jr. new magnetic Stirrer-Hot Plate, also Heliflow Centrifugal Separator, Ultra-Micro Blood Analysis Procedure, Clinical pH Meters, Multiple-Cell Electrophoresis System.

Animal Breeding and Restraining Cages, Long-term Infusometer, and disposable culture ware and other clinical laboratory items.

THE WILLIAMS & WILKINS CO., Baltimore, Md. *(Booth 174, Aisle F)*, will feature Best & Taylor, *The Physiological Basis of Medical Practice* (7th ed.), which has been completely brought up-to-date. Since the field of physiology has become so broad, the original authors have enlisted the aid of 28 contributors, including Robert W. Berliner, Donald W. Clarke, Donald E. Gregg, J. Earl Thomas, and W. B. Youman. The book, published in January 1961, has 1,570 pages, 657 figures.

WILMOT CASTLE COMPANY, Rochester, N. Y. *(Booth 170C & D, Aisle G)*. Representatives will demonstrate a new line of Pressure Steam Autoclaves, as well as their line of Sterox-O-Matic Gas Sterilizers and the direct-from-steam Steril-Aqua Distillation Process. The new Orthomatic Sterilizers feature full-automatic "push-button" controls and a quick-set temperature-control system which allows temperature settings between 220°F and 270°F, to be made at finger touch with no need of pressure regulator adjustment.

WORTHINGTON BIOCHEMICAL CORP., Freehold, N. J. *(Booths 48 & 49, Aisle B)*. As in previous years, a new edition of their Manual will be distributed, and technical personnel will be available for discussions pertaining to new products and enzyme reagents.

THE YEAR BOOK PUBLISHERS, INC., Chicago, Ill. *(Booth 33, Aisle A)*, will present such books as *Medical Physics* (New vol. 3; *Mathematics of Medicine and Biology* (new); *Physiology of the Digestive Tract* (new); *Clinical Use of Radioisotopes* (new ed.); *Methods in Medical Research* (New vol. 8); *Biomechanics of the Central Nervous System* (new); *Inborn Errors of Metabolism; The Lung: Clinical Physiology and Pulmonary Function Tests*, and others.

YELLOW SPRINGS INSTRUMENT CO., Yellow Springs, Ohio *(Booth 161, Aisle F)*, will exhibit instruments in four major classes: New Instrumentation—a transistorized, battery-powered, portable, instantaneous hematocrit meter; Laboratory Instruments—thermistor thermometers and controllers, interchangeable and non-interchangeable thermistor probes, and laboratory recorders; Blood Gas Analysis Equipment—the Severinghaus Clark Mark III pO_2 device and the Clark electrode; Psychophysiological Instruments—the Fels Dermohmeter and Cardiotachometer.

CARL ZEISS, INC., New York City *(Booths 145, 146 & 147, Aisle E)*, will display camera microscope Ultraphot II with automatic exposure device; Photo-Microscope with automatic exposure device; research microscope WL; laboratory microscopes GFL and KF; Inverted Microscope; Fluorescence Microscope; Spectrophotometer PMQ II with accessories for chromatogram attachment, flame equipment, fluorescence, reflectance, and microcell attachments; Abbe Refractometer; Dipping Refractometer; Hand Spectroscope; Diffusion Interferometer; Polarimeter 0.01°; and Particle Size Analyzer.

INSTITUTIONAL EXHIBITS

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, Washington, D. C. *(Booth G)*. Information regarding membership, activities of the Association and sample copies of the Association publication, *Science*.

AMERICAN HEART ASSOCIATION, INC. ROBERT OKIN, New York City *(Booth I)*. The exhibit describes the scientific publications of the American Heart Association, which are aimed exclusively at physicians and research workers. The journals, *Circulation, Circulation Research, Modern Concepts of Cardiovascular Disease*, and *Heart Bulletin* are pictured and described. Several books—*Symposium on Congestive Heart Failure, Hypertension, Symposium on Salt and Water Metabolism*, etc. are also described. Samples of each publication will be available for inspection.

ANIMAL CARE PANEL, INC., Lemont, Ill. *(Booth J)*. The exhibit will consist of a framework that will carry photographs and sheets of printed material. The former will illustrate scenes within animal quarters. The latter will describe the activities of the Panel and their relationship to the biological phase of medical research. These include training programs, developments in laboratory animal medicine, and research in animal care methods.

ANNUAL REVIEWS, INC., Palo Alto, California *(Lounge)*. The exhibit will consist of 50 books displayed along with 2000 copies of a Prospectus for distribution to visitors. The volumes on exhibition are the *Annual Review of Entomology, Psychology, Physiology, Medicine, Plant Physiology, Biochemistry, Physical Chemistry, Microbiology, and Nuclear Science*.

BIOLOGICAL ABSTRACTS, University of Pennsylvania, Philadelphia *(Booth B)*—An information service that reports the world's biological research results. The exhibit is designed to illustrate that in 1961 nearly 100,000 articles from more than 5,000 journals originating in 83 countries will be screened and reported in 24 semi-monthly issues in easy-to-read capsule form. Such features as current coverage, continued new areas of documentation research, scope and depth of indexing and specialized sections for individual biologists are further illustrated. Representatives will be on hand to welcome visitors, answer questions, and solicit volunteer abstracters.

CENTER FOR AGING RESEARCH, National Institutes of Health, Bethesda, Md. *(Booth Q)*. The exhibit depicts the five major activities of the Center. It also shows the various components of the Public Health Service that have related programs in aging. In addition, the grant mechanism of the National Institutes of Health in graphically presented.

FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY, Washington, D. C. *(Lounge)*. Journals, books, and other publications of the Federation and its constituent Societies will be displayed. Staff members will be on hand to answer questions and to take orders and subscriptions.

INTERSOCIETY COMMITTEE FOR RESEARCH POTENTIAL IN PATHOLOGY, INC., and Pathology Study Section, National Institutes of Health. HOWARD C. HOPPS, University of Texas Medical Branch, Galveston, Texas *(Booth O)*. Pathology's role in biologic research will be summarized, past and present, with predictions for the future. This will include presentation of statistical data to indicate the extent and breadth of research in pathology today as compared with that during the past ten years.

MUSCULAR DYSTROPHY ASSOCIATIONS OF AMERICA, INC., New York City *(Booth D)*. A new exhibit will be presented in which the clinical, physiologic, metabolic, and pathologic changes that occur in muscular and neuromuscular disorders will

be contrasted. These changes will be graphically demonstrated by means of clinical photographs, photomicrographs, electromyographs and charts with some accompanying text. A section will be devoted to basic research, showing current areas under investigation and the importance of these areas in elucidating the various disease processes described above.

NATIONAL HEART INSTITUTE, Bethesda, Md. *(Booth N).* The exhibit presents research of the Gerontology Branch, National Heart Institute, and the Baltimore City Hospitals. This research is directed toward finding answers to questions concerning age changes occurring in the total man, within a single organ system and within tissues and cells.

NATIONAL INSTITUTE OF ARTHRITIS AND METABOLIC DISEASES, National Institutes of Health, Bethesda, Md. *(Booth K).* This exhibit describes the overseas nutrition surveys of the Interdepartmental Committee on Nutrition for National Defense—an administrative unit of the National Institute of Arthritis and Metabolic Diseases. The exhibit consists of textual material describing this agency and the nature of its world-wide nutrition work. It features an extensive visual portion concerned with individual nutrition surveys overseas, their results, and the nutritional deficiencies encountered. Printed reports for each survey are part of the exhibit material.

NATIONAL INSTITUTE OF NEUROLOGICAL DISEASES AND BLINDNESS. EDWIN L. HOVE, National Institutes of Health, Bethesda, Md. *(Booth E).* The exhibit will provide information on research and training grants and awards available to individuals and institutions through NINDB. It will feature purpose, availability, and primary qualification data for individuals and institutions, type and duration of support, amount of stipends and allowances, specialties of interest to NINDB, and instructions for application to qualified basic and clinical scientists for research, advanced study and training for academic careers in the neurological and sensory fields.

NATIONAL SCIENCE FOUNDATION, Washington, D. C. *(Booth C).* This exhibit of the National Science Foundation, an independent agency of the Federal Government, highlights those Foundation programs of particular interest to members of the FASEB. These programs are concerned for the most part with the support of basic research, training, and education in the sciences, and the exchange of scientific information.

ORAL EXFOLIATIVE CYTOLOGY. HENRY C. SANDLER, Veterans Administration Dental Service, Washington, D. C. *(Booth P).* The exhibit illustrates the application of exfoliative cytology as it applies to surface lesions in the oral regions. This is a cooperative study in which 12 Veterans Administration installations participated and the exhibit will show by color transparencies and graphs the findings demonstrated in the first year of the study.

PLETHYSMOGRAPHY OF THE FINGER USING A MERCURY STRAIN GAUGE. C. J. EAGAN L. D. CARLSON, NISHIO HONDA AND R. ELSNER, Departments of Physiology, Universities of Kentucky and Washington, and USAF Arctic Aeromedical Laboratory, Lexington, Ky., Seattle, Washington and Fairbanks, Alaska *(Booth A).* This exhibit proposes to illustrate by means of charts, and to demonstrate at specified times, a method of plethysmography which has great senistivity, stability, and flexibility.

SCIENTISTS' COMMITTEE FOR RADIATION INFORMATION, INC. SIDNEY SOCOLAR, New York Academy of Sciences, New York City *(Booth H).* Exhibit depicts activities characteristic of groups of scientists throughout the country that are seeking to inform the general public on the nature, sources, and effects of ionizing radiation. Literature relevant to this theme is available. The aim of the exhibit is to demonstrate what is and what can be done by scientists to reduce popular confusion on the scientific aspects of radiation.

TOBACCO INDUSTRY RESEARCH COMMITTEE. J. MORRISON BRADY, New York City *(Booth L).* The scientific research program developed and directed by the Scientific Advisory Board to the Tobacco Industry Research Committee is described. The research program, covering all phases of tobacco use and health, contains three main areas of investigation within which are the specific fields of research. These areas and specific fields are described. Grants-in-aid have been awarded so far to more than 100 scientists in over 65 institutions, and recipients have published over 130 papers to date in their research in medical and scientific journals.

WASHINGTON UNIVERSITY. W. STANLEY HARTROFT, School of Medicine, Department of Pathology, St. Louis, Mo. *(Booth F).* The exhibit consists of demonstrations of current researches in experimental pathology from this department, including electron microscopy of cardiovascular disease, experimental diabetes, diseases of the liver and bone, and joint disease in animals.

THE WISTAR INSTITUTE, Philadelphia, Pa. *(Booth M).* The Wistar Institute of Anatomy and Biology, the oldest biological research institute in the U.S.A. and cooperative nonprofit science publishers science 1908, will exhibit their eight basic science research periodicals, featuring *The Journal of Nutrition*, official organ of the American Institute of Nutrition. A cordial invitation is extended to all. Copies of the journals will be available.

AUTHOR INDEX

A

Abbott, L. D., Jr., A-376a, P-1422
Abboud, F. M., A-113a, P-1001; A-317a, P-393
Abbrecht, P., A-405e, P-1322
Abelson, N. M., A-23d, P-2277
Abood, L. G., A-145f, P-2645; A-237d, P-2592; A-298c, P-1638
Abraham, A., A-440b, P-2360
Abraham, D., A-344b, P-30
Abraham, S., A-343d, P-2652
Abrahamson, L., A-375b, P-2647
Abramcff, P., A-24e, P-1748
Abrams, A., A-362d, P-1997
Abrams, R., A-362f, P-2002
Abrams, R. D., A-326c, P-1081
Acsto, M. D., A-102d, P-362
Ackerman, C. J., A-203c, P-2313
Ackermann, W. W., A-441f, P-1728; A-442a, P-1730
Acs, G., A-234b, P-2629
Adam, D. J. D., A-365c, P-1090
Adamis, D., A-59b, P-2432
Adamkiewicz, V. W., A-189e, P-78
Adams, E., A-254f, P-2602
Adams, H. R., A-157d, P-2200
Adams, J. M., A-436a, P-2764
Adams, T., A-208f, P-744
Adams, W. C., A-198c, P-1817
Adamson, G. E., A-129f, P-1988
Adelman, W. J., Jr., A-346f, P-247
Adelstein, S. J., A-398c, P-135
Adey, W. R., A-337b, P-1973
Adhikari, P. K., A-425f, P-702
Adler, M. W., A-320e, P-2401
Adolph, E. F., P-182
Adolph, R. J., A-124d, P-1299
Afonso, S., A-101d, P-1289; A-102e, P-359
Agranoff, B. W., A-281c, P-813
Ahlberg, J. W., A-283b, P-2681
Ahlquist, R. P., A-314c, P-2212; A-315d, P-2219
Ainsworth, E. J., A-400f, P-2748
Akahori, Y., A-269e, P-2025
Akamatsu, Y., A-160f, P-1047
Akedo, H., A-140d, P-1458
Akers, T. K., A-110f, P-177
Aladjem, F., A-20d, P-2804
Albanese, A. A., A-378c, P-476
Albert, J. R., A-309f, P-1011
Alberts, A. W., A-273c, P-278
Al Dawody, A., A-10c, P-2631
Alexander, B., A-57c, P-43
Alexander, C. S., A-166d, P-2263
Alexander, F., A-410b, P-1629
Alexander, N. M., A-202d, P-2486
Alexander, S. C., A-212e, P-1881
Alfin-Slater, R. B., A-366d, P-2789
Allcan, F., A-116b, P-779
Allivisatos, S. G. A., A-43d, P-797
Alkjaersig, N., A-58b, P-1859
Allen, F. W., A-356c, P-1383
Allen, J. R., A-433d, P-1039
Allen, R. C., A-54f, P-605
Allen, S. C., A-421f, P-1991
Allison, J. B., A-370c, P-1700
Allmann, D. W., A-274a, P-274
Alonso-deFlorida, F., A-318f, P-2172
Aloni, K., A-91c, P-1664
Alper, C., A-207f, P-1088
Alpers, M., A-347b, P-1911
Alpers, J. B., A-226c, P-1243
Alphin, R. S., A-251f, P-2739
Altamirano, M., A-249b, P-1265
Althausen, T. L., A-242c, P-201
Altman, A. A., A-65f, P-1089
Altschuler, H., A-275d, P-2507
Altshuler, C. H., A-164a, P-2302; A-361f, P-2301
Altsuler, N., A-188d, P-599; A-192f, P-34; A-193e, P-33
Alvarez, A. P., A-370b, P-2318
Alvarez, S., A-411e, P-2189
Alvord, E. C., Jr., A-262f, P-2278; A-343b, P-1778
Amassian, V. E., A-333c, P-778
Amberson, W. R., A-73a, P-72
Amer, M. S., A-82b, P-2019
Ames, B. N., A-225b, P-2128
Amiraian, K., A-19a, P-526
Ammerman, C. B., A-293d, P-1124; A-296e, P-510
Anastasi, J. N., A-342a, P-1316
Anderson, A., A-172e, P-1835
Anderson, D. G., A-350a, P-2673
Anderson, G. F., A-52d, P-609
Anderson, J. D., A-83c, P-2660
Anderson, J. T., A-96d, P-1200
Abderson, L., A-374b, P-954
Anderson, N., A-131b, P-2528
Anderson, N. G., A-354f, P-1389
Anderson, Q. N., A-108c, P-766; A-409c, P-673
Anderson, R. C., A-434f, P-1594
Anderson, R. L., A-85a, P-2650
Anderson, W., A-210c, P-2517
Andresen, R. H., A-35b, P-430; A-35c, P-429
Anfinsen, C. B., A-217f, P-939
Angelakos, E. T., A-125a, P-205; A-125b, P-208
Angers, M., A-410e, P-1630
Angrist, A. A., A-133f, P-1652
Anjaneyalu, Y. V., A-363f, P-2788
Anker, C. A., A-278c, P-335
Anthony, D. D., A-288e, P-2
Anton, A. H., A-171c, P-1608
Antoniades, H. N., A-191a, P-82
Antopol, W., A-261c, P-2760; A-261e, P-2754
Anwar, R. A., A-374d, P-1561
Apgar, J., A-390c, P-1473
Aposhian, H. V., A-361b, P-2004
Aprison, M. H., A-341e, P-1312
Apter, J. T., A-341b, P-240
Arai, K., A-451e, P-896
Aramendia, P., A-317f, P-1618
Aras, A., A-355d, P-2291
Arata, D., A-9d, P-2776
Archdeacon, J. W., A-67e, P-1374
Archer, O., A-18b, P-2801; A-26d, P-1740
Ariza-Mendoza, F., A-100c, P-1908
Arlinghaus, R. B., A-1e, P-2067
Armstrong, B., A-431c, P-1967
Armstrong, D. T., A-187c, P-600
Armstrong, G. G., Jr., A-114e, P-685
Armstrong, W. D., A-76e, P-2420
Arnason, B. G., A-263f, P-2376
Arnault, L. T., A-432b, P-1019
Arnold, A., A-192c, P-477; A-284f, P-478
Arnold, M. L., A-286e, P-301
Arnold, R., A-381e, P-1446
Arnon, D. I., A-83c, P-2660; P-1725
Aronow, L., A-148f, P-421
Arquilla, E. R., A-12e, P-1677
Arrington, L. R., A-293d, P-1124; A-296e, P-510
Arroyave, G., A-372a, P-1084
Artom, C., A-280f, P-816
Artusio, J. F., Jr., A-312c, P-977; A-312d, P-976
Asano, M., A-157f, P-2750
Aschheim, E., A-100b, P-438
Asensio, C., A-85e, P-2653
Ashley, C. A., A-153d, P-1078
Ashley, L. M., A-290e, P-1076
Ashmore, J., A-166c, P-2705
Ashwell, G., A-86d, P-900
Ashworth, C. T., A-412f, P-1678
Askonas, B. A., A-382e, P-346
Asofsky, R., A-25a, P-2344
Astrachan, L., A-359c, P-913
Astwood, E. B., A-183b, P-594
Atchison, R. W., A-37a, P-1873
Atchley, W. A., A-148b, P-2390
Aterman, K., A-289e, P-460
Atik, M., A-109b, P-768
Atkins, I. C., A-74c, P-820
Atkinson, D. E., A-349e, P-2036
Atkinson, S. L., A-412e, P-2185
Attinger, F. M., A-249c, P-119
Auchincloss, J. H., Jr., A-430f, P-1964
Auerbach, T. P., A-41a, P-1146
August, J. T., A-439b, P-2608
Aulisio, C. G., A-436c, P-2358
Aungst, C. W., A-256b, P-821
Aurbach, G. D., A-232c, P-1558
Ausman, R. K., A-33b, P-533
Aust, J. B., A-33b, P-533; A-33e, P-1693
Austin, G., A-348f, P-169
Avery, M. E., A-429f, P-2539
Avery, P., A-153f, P-1698
Aviado, D. M., A-99c, P-357; A-106e, P-1349; A-109f, P-2178
Avi-Dor, Y., A-51c, P-2644
Awad, O., A-321b, P-1021; A-321c, P-1022
Axelrod, J., A-167c, P-23; A-236b, P-872
Aycock, J., A-89e, P-364
Ayers, C. R., A-178b, P-1844; A-178c, P-1845; A-178d, P-1847

B

Babcock, V. I., A-443f, P-1133
Babin, D. S., A-408d, P-2290
Bacaner, M. B., A-98f, P-1897
Bach, L. M. N., A-348b, P-1977
Bach, M. L., A-255d, P-883
Bache, R. J., A-98c, P-216
Bacila, M., A-84d, P-2649
Back, N., A-157c, P-2209
Baeder, D. H., A-103a, P-361
Baer, H., A-66d, P-2361
Baer, J. E., A-414f, P-2188
Bagdon, R. E., A-434b, P-1597
Baggenstoss, A. H., A-184e, P-634
Baglioni, C., A-254a, P-2621
Bagwell, E. E., A-313a, P-980
Bahn, R. C., A-178b, P-1844
Bailey, H., A-74a, P-190
Bailey, J. M., A-78f, P-2307; A-151e, P-1247
Bailey, W. L., A-261d, P-2755
Baird, B., A-210f, P-2553
Bakemeier, R. F., A-218c, P-805
Baker, C. H., A-121a, P-1960
Baker, E. E., A-29a, P-1769; A-29b, P-546
Baker, E. M., A-85d, P-2306
Baker, H., A-277b, P-2249
Baker, J., A-47e, P-1555
Baker, S. P., A-93c, P-2461
Baker, W. K., A-81c, P-2095
Bakerman, S., A-382b, P-2296
Bakshy, S., A-237c, P-2593
Baldwin, R. L., A-354b, P-2090
Bale, W. F., A-58c, P-1856
Balegno, H. F., A-164e, P-1283
Balfour, W. M., A-340c, P-1310; A-341d, P-1313
Balint, J. A., A-246b, P-1263
Balkissoon, B., A-132c, P-150
Ball, W. C., Jr., A-420f, P-2572
Ballou, C. E., A-278a, P-811
Baltrus, B. M., A-184a, P-639
Bamforth, B. J., A-313b, P-982
Banaszak, L. J., A-267c, P-827
Bandemer, S. L., A-366b, P-1115
Bane, H. N., A-105e, P-756
Banerjee, C. M., A-422b, P-2563
Banes, D., A-199b, P-2479
Baney, R. N., A-28b, P-1743
Banks, E. M., A-186d, P-236
Banovitz, J., A-31e, P-1149
Banson, B. B., A-288d, P-2264
Bárány, K., A-299f, P-2540
Bárány, M., A-298e, P-1799
Baratz, R. A., A-423a, P-2565
Barban, S., A-166e, P-1244
Barbaro, J. F., A-19b, P-527
Barbato, L., A-237d, P-2592
Barber, A. A., A-267a, P-940
Barber, M. L., A-354f, P-1389
Barcelo, R., A-378f, P-2265
Barclay, W. R., A-105a, P-1354
Bard, P., A-186c, P-230
Bardawil, W. A., A-35e, P-436; A-161b, P-454; A-162c, P-455
Barden, H., A-192b, P-1674
Bareta, J., A-164a, P-2302; A-361f, P-2301
Barger, A. C., A-101c, P-1300
Bargmann, S., A-221d, P-934
Barka, T., A-248a, P-1057; A-288f, P-461; A-289c, P-1056
Barker, H. A., P-257
Barker, H. G., A-244f, P-195
Barker, J. N., A-418b, P-1950
Barker, S. B., A-204f, P-1185; A-207c, P-2410
Barlow, C. F., A-329f, P-592
Barlow, J., A-443a, P-1734
Barnaby, J., A-300c, P-2551
Barnard, E. A., A-221a, P-933
Barnes, B. O., A-97b, P-622
Barnes, R. H., A-369f, P-2329; A-371d, P-2325
Barness, L. A., A-65f, P-1089; A-447b, P-2781
Barnett, H. L., A-269b, P-2784
Barnett, L. B., A-231b, P-908
Barnhart, M. I., A-52d, P-609
Baron, S., A-258c, P-2382
Barr, L. M., A-297b, P-726; A-347b, P-1911
Barraclough, C. A., A-187a, P-238
Barrett, R. J., A-183b, P-594
Barrett, W. E., A-393a, P-1170; A-409f, P-1631
Barron, D. H., A-422e, P-704
Barrow, E. M., A-57f, P-47
Barrows, C. H., Jr., A-364b, P-485; A-371c, P-2337
Barry, F. M., A-191f, P-86
Barry, G. T., A-30a, P-1496
Barry, J. Q., A-210e, P-2555
Bartels, E., A-305f, P-1210
Bartlett, P., A-48e, P-307
Bartlett, R. G., Jr., A-430a, P-2570
Bartolucci, G., A-100c, P-1908
Bartsch, G., A-236a, P-865
Bartsch, R. G., A-43b, P-1482
Basch, R., A-39f, P-2279
Basch, S., A-91a, P-389
Basford, R. E., A-146d, P-884
Baskys, B., A-237b, P-2292
Bass, A. D., A-301c, P-1636
Bassett, E. W., A-22f, P-1768
Bassingthwaighte, J. B., A-99b, P-226
Bastian, J. W., A-134c, P-2414
Batchelor, W. H., A-160b, P-191
Bates, D. V., A-133a, P-758; A-420f, P-2572
Bates, H. M., P-254
Battaglia, F. C., A-422e, P-704
Battaile, J., A-375f, P-490
Batterman, R. C., A-169d, P-1016; A-191c, P-32; A-286f, P-1027
Battisto, J. R., A-258e, P-2379
Bauer, A. C., A-73a, P-72
Bauman, A. J., A-268a, P-810
Bauman, A. W., A-403f, P-672
Baumberger, J. P., A-162d, P-2599
Bautz, E., A-353d, P-2086
Baxter, D., A-294b, P-1683
Baxter, David, A-73d, P-2259
Baxter, J. H., A-387c, P-1605
Bayer, W. L., A-53f, P-603
Beals, R., A-244f, P-195
Bean, J. W., A-100e, P-1906
Beard, A. G., A-366f, P-470
Beard, J. W., P-560
Bearn, A. G., A-255c, P-826
Beasley, A. R., A-443b, P-1735
Beatty, C. H., A-301e, P-3546; A-302f, P-71
Beaver, T. H., A-158f, P-2757
Bechtel, A. A., A-105f, P-759
Beck, D., A-406a, P-1321
Beck, I. T., A-253b, P-2740
Beck, L., A-115e, P-1003
Beck, L. V., A-392b, P-412
Beck, W. S., A-450a, P-852
Becker, C. E., A-239b, P-1539
Becker, E. Lovell, A-405f, P-1325
Becker, Elmer L., A-19b, P-527
Becker, M., A-355d, P-2291
Becker, R. R., A-380e, P-1535
Beckett, P., A-79e, P-1546
Becklake, M. R., A-131b, P-2528; A-133a, P-758
Beckwith, J. R., A-216c, P-1567
Beckwith, W., A-345b, P-1317
Bedell, C. W., A-207e, P-483
Bedford, J. M., A-418f, P-1945
Beeler, D. A., A-96f, P-1629
Beers, R. F., Jr., A-351e, P-1996
Beevers, H., A-82f, P-2018
Behal, F. J., A-52a, P-1536
Behrman, E. J., A-6b, P-2129
Beigelman, P. M., A-12e, P-1677

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Beinert, H., A-45a, P-1398
Beiser, S. M., A-22f, P-1768; A-288a, P-656
Belding, H. S., A-211f, P-1337
Bell, M. C., A-296d, P-505
Bellet, S., A-58f, P-1861; A-59a, P-1860
Bellman, R., P-2500
Bello, L. J., A-439a, P-2610
Bellville, J. W., A-311b, P-1009
Belman, S., A-42f, P-1481
Belton, P., A-339b, P-2550
Ben, M., A-328e, P-1174
Benacerraf, B., A-37e, P-2273; A-40d, P-1156; A-258f, P-2378
Bender, F., A-130f, P-151; A-132d, P-152
Bender, M. B., A-328a, P-1916
Bendet, I. J., A-439c, P-833
Bendich, A., A-154e, P-2082
Benditt, E. P., A-74d, P-2256; A-95e, P-1663; A-133e, P-1659; A-164c, P-444
Benedict, C. R., A-82f, P-2018
Benesch, R., A-70b, P-2618
Benesch, R. E., A-70b, P-2618
Benfey, B. G., A-316a, P-1576
Benjamin, F. B., A-342a, P-1316
Benke, J., A-133c, P-2526
Bennett, A., A-152f, P-1248
Bennett, E. L., A-343d, P-2652
Bennett, M. V. L., A-339c, P-166; A-339e, P-167
Benslay, D. N., A-251a, P-118
Benson, A. A., A-79d, P-1403
Benson, L., A-443a, P-1734
Bentley, R., A-80c, P-279
Benzinger, T. H., A-213b, P-1328
Beran, A., A-324f, P-1308
Berenson, G. S., A-159c, P-456; A-163a, P-1411
Berg, P., A-363d, P-1478
Bergen, J. R., A-305b, P-1217
Berger, F. M., A-113b, P-397; A-113d, P-396
Berger, F. M., A-113c, P-398
Berger, L., A-416a, P-665
Berger, L. R., A-413f, P-1278
Berger, S., A-190d, P-35
Berkman, S., A-247e, P-1545
Berkson, D. M., A-97a, P-621
Berl, S., A-342e, P-2627
Berliner, R. W., P-1318
Berman, H. J., A-61c, P-2436
Berman, L., A-150f, P-95
Bernard, R. A., A-338a, P-1363
Berndt, W. O., A-144b, P-1640
Berne, R. M., A-101e, P-1291; A-104a, P-219
Bernfeld, P., A-73c, P-828
Berns, A., A-17b, P-1777
Bernstein, E. H., A-439f, P-2767
Berry, J. F., A-271a, P-942
Bertino, J. R., A-65b, P-1517
Berton, W. M., A-196f, P-2298
Bessman, M. J., A-439a, P-2610
Bessman, S. P., A-193d, P-2096
Bethune, J. L., A-20c, P-318
Beveridge, J. M. R., A-248e, P-475
Beyer, K. H., A-414f, P-2188
Beyer, R. E., A-48d, P-2490
Beyler, A. L., A-198a, P-477; A-418e, P-1944
Bezkorovainy, A., A-385d, P-2136
Bhagavan, N. V., A-170c, P-2080
Bhalerao, V. R., A-368b, P-1109
Bhargava, I., A-185e, P-237
Bhatia, B., A-211b, P-2552
Bickerton, R. K., A-112f, P-401
Bickford, R. G., A-322e, P-629; P-2499
Bieber, A. L., A-281b, P-817
Bierman, H. R., A-69a, P-2210
Bignall, K. E., A-331a, P-1980
Bihler, I., A-140b, P-1453
Bindler, E. H., A-319b, P-2700
Binette, J. P., A-383b, P-2138
Binford, B. R., A-67e, P-1374
Bird, F., A-428d, P-1005
Bird, H. R., A-7f, P-1708
Birdwell, B. J., A-68f, P-2713
Birnie, J. H., A-201a, P-2483
Birnstiel, M., A-147f, P-795
Bischoff, F., A-282a, P-354
Bishop, C., A-64f, P-2690
Bishop, J., A-389f, P-1476
Bishop, J. A., A-413f, P-1278
Bishop, J. S., A-188d, P-599; A-192f, P-34; A-193e, P-33
Bishop, N. I., A-88a, P-2668
Biswas, B. B., A-362f, P-2002
Biswas, D. K., A-450e, P-492
Bjerre, S. H., A-84a, P-2648
Bjotvedt, G., A-249c, P-119
Blaber, P., A-173e, P-1034
Black, F. L., A-437d, P-516
Black, J. C., A-349c, P-1288
Black, M. M., A-24b, P-2256
Black, W. C., A-177e, P-2405
Blackburn, W. R., A-101f, P-1293
Blacker, G. J., A-171f, P-2224
Blackwell, R. Q., A-140a, P-189
Blackwood, C., A-216d, P-347
Blackwood, U. B., A-293b, P-1125
Blake, W. D., A-407c, P-1324
Blakemore, W. S., A-106b, P-1353; A-117a, P-783; A-121c, P-787; A-150e, P-98
Blank, M., A-424d, P-159
Blankenhorn, D. H., A-94f, P-449
Blankenship, J. W., A-11b, P-2775
Blatt, W. F., A-58a, P-2431
Blaustein, M. P., A-138a, P-1933
Blaylock, B. A., A-46d, P-1402
Blecher, M., A-140f, P-1457
Bleiberg, M. J., A-433b, P-391
Bloch, K., A-230f, P-289; P-2438
Block, M. H., A-402f, P-2745
Bloodworth, J. M. B., Jr., A-192d, P-1676
Bloom, B., A-41d, P-2023
Bluitt, J., A-172e, P-1835
Blum, A. S., A-105b, P-755
Blumberg, H., A-311d, P-1582
Blumenfeld, O. O., A-383a, P-1440
Blumenthal, H. T., A-159d, P-2248; A-194f, P-2493
Blumenthal, H. T., A-17b, P-1777
Blumstein, J. R., A-214e, P-684
Boba, A., 407e, P-1680
Bobalik, G. R., A-134c, P-2414
Bobb, J. R. R., A-120b, P-1986
Bocage, A. J., A-101f, P-1293
Bocek, R. M., A-301e, P-2546
Bock, R. M., A-356b, P-1474
Bodansky, O., A-156c, P-350
Boedtker, H., A-357b, P-837
Boehme, D. H., A-266b, P-443
Boelsche, A. N., A-365c, P-1090
Boff, E., A-393b, P-1171
Bogdanove, E. M., A-185e, P-237
Bogdanove, J. N., A-185e, P-237
Boger, W. P., A-445c, P-2206
Bohl, R. E., A-122c, P-967
Bohr, D. F., A-298f, P-1793
Bohr, V. C., A-319d, P-2396
Bois, P., A-257a, P-442
Bolden, B. T., A-398b, P-2747
Bollman, J. L., A-204b, P-2043; A-252d, P-19; A-286b, P-1281
Bond, G., A-143a, P-853
Bond, T. P., A-56b, P-1854
Bond, V. P., A-68b, P-2449
Bondurant, S., A-428b, P-2576
Bondy, D. C., A-243b, P-12
Bonner, J., A-147f, P-795
Booker, W. M., A-115d, P-686; A-122f, P-966; A-172e, P-1835
Boone, M. A., A-419c, P-355
Booth, B. A., A-156a, P-961
Borchers, G. L., A-292a, P-1121; A-292e, P-1122
Borek, E., A-357d, P-839
Boren, J. J., A-323f, P-626; A-394d, P-54
Borenfreund, e., A-154e, P-2082
Borgese, T. A., A-65d, P-1065
Borgström, B., P-1193; P-2439
Borison, H. L., A-169e, P-2166; A-320c, P-2394; A-426c, P-2537; P-569
Borman, A., A-185a, P-1430
Boroff, D. A., A-36b, P-544
Borowitz, J. L., A-340d, P-1834
Borrelli, J., A-61b, P-52
Bortoff, A., A-246c, P-729
Boshart, C. R., A-276c, P-2721
Bosley, L., A-76c, P-2419
Bott, P. A., A-416c, P-124
Bourdillon, J., A-78c, P-2654
Bourgault, P., A-321a, P-624
Bourne, R. B., A-415e, P-1275
Bowen, N., A-409e, P-1625
Bowles, G. R., A-315b, P-1837
Bowman, E. R., A-172d, P-992
Boxill, G. C., A-328e, P-1174
Boyarsky, L. L., A-333d, P-777
Boyarsky, S., A-300f, P-728
Boyce, W. H., A066a, P-2362
Boyd, E. S., A-328b, P-627
Boyd, L. J., A-113f, P-395
Boyer, P. D., A-49c, P-888
Bradbeer, J. W., A-88d, P-2663
Bradley, R. M., A-281c, P-813
Bradley, S. G., A-152c, P-1246
Bradley, W. B., A-448f, P-2315
Braham, J. E., A-7c, P-1098
Brake, J. M., A-240a, P-926
Bralow, S. P., A-250a, P-121
Bramante, P. O., A-206e, P-2512
Brambila, S., A-368e, P-1118
Brancato, P., A-262e, P-2275
Branch, A., A-83f, P-2595
Branche, W. C., Jr., A-440c, P-1167
Brand, E. D., A-117b, P-366
Brand, K. G., A-151b, P-97
Brand, L., A-221d, P-934
Brannen, W. T., Jr., A-54a, P-1230
Brassfield, C. R., A-431d, P-1968
Braude, A. I., A-260e, P-2657
Brauer, R. W., A-286a, P-1284; A-286b, P-1281
Braun, C., A-169b, P-2230; A-310f, P-406
Braun, H., A-102a, P-1296
Braun, W., A-22d, P-554
Braunwald, E., A-120c, P-679; A-127a, P-146; A-133b, P-2519; A-313f, P-1619
Brawerman, G., A-359b, P-915
Bray, G. A., A-406c, P-1320
Brazinsky, J. H., A-151e, P-1247
Brecher, G. A., A-125e, P-144
Bregman, E., A-13a, P-649; A-13b, P-648
Brendler, H., A-225f, P-1426
Brennan, D. M., A-200f, P-2475
Brennan, F. T., A-409d, P-1628
Brent, R. L., A-398b, P-2747
Bresler, E. H., A-406f, P-1326
Bresnick, E., A-227f, P-2054
Bressani, R., A-7b, P-1709; A-7c, P-1098
Bressler, R., A-274d, P-276
Bretthauer, R. K., A-256c, P-1542
Breuer, C., A-185a, P-1430
Breuer, L., A-372c, P-479
Brewer, N. R., P-1791
Bridges, R. A., A-32c, P-2373
Brierley, G., A-45d, P-2637
Briggs, A. H., A-118a, P-994
Briggs, F. N., A-300c, P-2551
Briggs, G. M., A-454c, P-2314
Brin, M., A-228f, P-2305
Brinkhous, K. M., A-62a, P-1660
Brinkman, G. L., A-296b, P-507
Brinling, J. C., A-311f, P-2471
Briscoe, A. M., A-160d, P-2297
Briscoe, W. A., A-421b, P-157; A-421e, P-2520
Britten, J. S., A-137c, P-738
Brockenbrough, E. C., A-133b, P-2519
Brodbine, M. A., A-330b, P-1048
Brodie, A. F., A-50e, P-1396; P-1723
Brodie, B. B., A-144a, P-1642; A-276f, P-2725; A-308b, P-1838; A-319a, P-2173; A-321e, P-102; A-321f, P-1803; A-322a, P-1840
Brodie, D. A., A-252a, P-2735
Brodsky, I., A-378b, P-2257
Brodsky, W. A., A-413c, P-130
Brody, M. J., A-115e, P-1003
Brody, O. V., A-62d, P-2134
Brody, T. M., A-434e, P-2226
Broitman, S. A., A-243b, P-12
Bromberg, P. A., A-431e, P-1970
Bromberger-Barnea, B., A-105e, P-756
Bromer, W. W., A-377a, P-1524
Bronner, F., A-292c, P-2418
Brooks, B., A-112d, P-1341
Brooks, B. E., A-446e, P-517
Brooks, C. J., A-76a, P-2423
Brooks, C. McC., A-125f, P-206
Brooks, F. P., A-249c, P-119
Brooks, V. B., P-565
Broomfield, C. A., A-380a, P-317
Broquist, H. P., A-9f, P-1419
Brot, N., A-282c, P-2502
Brouha, L., A-212a, P-1882; A-212b, P-1883
Brouillet, J., A-179d, P-336
Brown, A., A-355d, P-2291
Brown, A. L., Jr., A-184e, P-634; A-244b, P-17
Brown, A. M., A-106c, P-1355
Brown, B. B., A-320f, P-589
Brown, D. D., A-222f, P-2606
Brown, D. H., A-86b, P-300
Brown, D. V., A-63d, P-1067
Brown, E. B., P-1255, P-1257
Brown, G. M., A-447d, P-2048
Brown, J. R., A-220e, P-1447
Brown, J. W., A-143c, P-2684
Brown, M. B., A-52e, P-610
Brown, M. G., A-61e, P-1661
Brown, R., A-204d, P-2100
Brown, R. K., A-28e, P-1771; A-385a, P-2059
Brown, T. D., A-399c, P-2742
Brown, W. D., A-381a, P-2623
Browning, K. M., A-202f, P-2488
Bruce, D. L., A-308d, P-1014
Bruce, D. W., A-435e, P-1025
Bruderman, I., A-421d, P-2566
Bruhn, J. M., A-337c, P-724
Brum, V. C., A-155f, P-16
Brune, G. W., A-305c, P-1215; A-306d, P-1216; P-66
Brunkhorst, W. K., A-175a, P-1437
Bruns, R., A-161a, P-1046
Brunson, J. G., A-12d, P-2269; A-117c, P-1655; A-117d, P-1656
Brust, M., A-300b, P-2548
Bryan, A., A-173f, P-989
Bryan, F. T., A-57f, P-47
Bryant, J., A-378b, P-2257
Bryant, S. H., A-337f, P-717
Bryant, W. M., Jr., A-453a, P-2786
Bryson, G., A-282a, P-354
Bryson, M. J., A-283e, P-1461
Bubl, E. C., A-452c, P-2785
Bucci, G., A-426a, P-700
Buchanan, D. L., A-379a, P-1421
Buchanan, J. M., A-9e, P-1510
Bucher, N. L. R., A-286d, P-1286
Buchwald, N. A., A-327a, P-1981
Buck, K., A-97c, P-581
Buckalew, V. M., Jr., A-409b, P-1687
Buckler, C., A-258c, P-2382
Buckley, J. P., A-102d, P-362; A-112f, P-401
Bucovaz, E. T., A-389e, P-1471
Buddemeyer, E., A-449b, P-1101
Buendia, N., A-330c, P-173
Buescher, R. G., A-296d, P-505
Buetow, D. E., A-197b, P-2482
Buettner, K. J. K., A-208b, P-2516
Bullard, R. W., A-211e, P-752
Bulle, P. H., A-312a, P-975; A-319c, P-2729
Bunag, R. D., A-111c, P-358
Bunce, D. F. M., II, A-100f, P-1907
Bunch, S. L., A-353a, P-2088
Bunting, R. F., A-377e, P-311
Buonossisi, V., A-15b, P-1872
Burack, W. R., A-315f, P-1612; A-316e, P-2215; A-316f, P-2214
Burbott, A., A-375f, P-490
Burch, H. B., A-80f, P-303
Burchell, H., P-1254, P-1257
Burchenal, J. H., A-158b, P-368
Burdock, E. I., A-327f, P-2579
Burford, H., A-253d, P-2730
Burge, W. D., A-350d, P-2034
Burgess, L. E., A-449d, P-2319
Burgison, R. M., A-102f, P-363
Burk, D., A-79b, P-36
Burke, G., A-39e, P-2715
Burke, J. C., A-331e, P-1013
Burke, R., A-349b, P-170
Burke, W. T., A-72a, P-1064
Burkhalter, A., A-257d, P-2234
Burma, D. P., A-362e, P-2000
Burnett, J. P., A-389b, P-2116
Burnham, D. F., A-418e, P-1944
Burns, J. J., A-173e, P-1034
Burris, R. H., A-350c, P-2035
Burrows, B., A-105a, P-1354
Burrows, W., A-29d, P-545
Burstein, R., A-123e, P-998
Burton, A. C., P-1888
Busch, G. J., A-157b, P-374
Busch, H., A-156e, P-370; A-156f, P-367; A-157d, P-2200; A-383f, P-352
Bush, M. T., A-295b, P-1626; A-306f, P-2399
Bush, P., A-450d, P-854
Bushnell, L. S., A-65a, P-2073
Buskirk, E. R., A-207a, P-2511
Butler, W. T., A-27f, P-1746
Butow, R. A., A-49f, P-894
Butterfield, J. L., A-314f, P-2218
Buyske, D. A., A-171b, P-987; A-399d, P-1028
Bye, I., A-63e, P-1066
Byerrum, R. U., A-374d, P-1561
Byers, S. O., A-92c, P-570
Byvoet, P., A-157d, P-2200

"A" number is Abstract page number; letter following is position of abstract on page.

"P" number is paper serial number in the Program.

C

Cafruny, E. J., A-410c, P-1627
Cahill, C. L., A-175f, P-637
Cahill, G. F., Jr., A-403d, P-1272
Cain, S. M., A-423e, P-705
Cairoli, V. D., A-122e, P-1570
Caldwell, K., A-303c, P-2310
Calesnick, B., A-409e, P-1625
Calhoon, T. B., A-158e, P-723
Calhoun, W. K., A-448f, P-2315
Calkins, E., A-382f, P-2260
Callaghan, O. H., A-31a, P-1152
Callahan, A. B., A-119c, P-138
Callahan, J., A-294e, P-508
Callantine, M. R., A-418a, P-1948
Calvert, D. N., A-434e, P-2226
Cameron, B. F., A-69e, P-2615
Cammaroti, M. S., A-385b, P-321
Campbell, D. H., A-31e, P-1149
Campbell, G. S., A-104e, P-1359
Campbell, J. A., A-9a, P-2772; A-453, P-2787
Canady, W. J., A-231e, P-2109
Candler, L., A-425b, P-164
Canellakis, E. S., A-361a, P-2005
Canessa-Fischer, M., A-415c, P-131
Cann, J. R., A-229c, P-1532
Cannon, C., A-317b, P-1617
Cannon, J. A., A-37d, P-2451
Cannanelli, A., A-272e, P-81
Capalbo, E. E., A-25b, P-2345
Caplow, M., A-386f, P-2058
Caputto, R., A-355c, P-958; A-452b, P-2165
Cardoso, S. S., A-322b, P-2395
Carlson, C. W., A-8c, P-2331
Carlson, D. M., A-84e, P-902
Carlson, H. C., A-247b, P-1261
Carmichael, E. B., A-81b, P-296
Carnes, W. H., A-118e, P-451; A-160c, P-1413
Carpenter, C. C. J., A-178b, P-1844; A-178c, P-1845; A-178d, P-1847
Carpenter, F. G., A-345e, P-241; A-430c, P-1303
Carpenter, M. P., A-452b, P-2165
Carrasquer, G., A-413c, P-130
Carrier, O., A-120a, P-1891
Carroll, C., A-9d, P-2776
Carroll, N. V., A-191c, P-32; A-286f, P-1027
Carroll, R. T., A-57b, P-49
Carroll, S. K., A-206c, P-2162
Carruthers, B. M., A-192e, P-39
Carson, P. E., A-64b, P-860
Carson, S., A-241d, P-1949; A-241e, P-1599
Carsten, M. E., A-188f, P-315
Carter, E. T., A-423c, P-2564
Carter, J., A-211c, P-750
Carter, M. K., A-412e, P-2185
Carter, R. R., A-33a, P-535
Carter, W. J., A-128f, P-2241
Cartwright, G. E., A-118e, P-451; A-63a, P-2392
Carusi, E. A., A-438c, P-881
Cascarano, J., A-119b, P-1957; A-261a, P-411; A-403b, P-2741
Cascorbi, H. F., A-312b, P-978
Casey, W., A-410a, P-1624
Caspi, E., A-268d, P-339
Cass, J., P-1787
Cassin, S., A-420a, P-2596
Castagnoli, N., Jr., A-178e, P-1851
Castellanos, H., A-372a, P-1084
Casker, W. O., A-271c, P-1111
Castillo, C. A., A-99e, P-1894; A-101d, P-1289
Castro de la Mata, R., A-99c, P-357
Catanzaro, R., A-343c, P-2626
Catchpole, H. R., A-143b, P-655; A-160e, P-1038
Cate, J., A-318f, P-2172
Caulfield, J. B., A-263a, P-1; A-407f, P-2261
Causley, D., A-450d, P-854
Cavalieri, L. F., A-352e, P-2091
Cavallo, M., A-192a, P-85
Cavanaugh, J. J. A., A-24f, P-1747
Cederquist, D. C., A-9d, P-2776; A-245e, P-2327
Ceffaratti, M., A-433b, P-391
Celada, F., A-33a, P-535
Celander, D. R., A-56b, P-1854; A-59d, P-2429; A-59f, P-1855; A-60a, P-1857
Century, B., A-269a, P-1108; A-367b, P-1825
Cervcado, L. R., A-357c, P-351
Cervoni, P. P., A-128d, P-995
Cevallos, W. H., A-271a, P-942
Chaikoff, I. L., A-282c, P-2502; A-282f, P-1466
Chain, E. B., A-343c, P-2626
Chakraborty, K. P., A-361d, P-846
Chakravarti, R. N., A-92e, P-571
Chakravorty, M., A-84d, P-2649
Chalmers, R. K., A-320b, P-628
Chalmers, T. C., P-1192
Chamberlain, C. C., A-37d, P-2451
Chambers, W. W., A-336b, P-174
Chan, W.-Y., A-195a, P-1224
Chance, B., A-50a, P-892; P-2495; P-2698
Chandler, P. T., A-291e, P-1129
Chang, M. L. W., A-296a, P-502
Chang, R. S., A-436d, P-2352
Chang, Y.-O., A-9c, P-2773
Channin, E., A-427c, P-2538
Chanock, R. M., A-436c, P-2358
Chao, F.-C., A-435f, P-836
Chao, K. C., A-8e, P-1710
Chaphekar, P. M., A-72d, P-1695
Chapman, C. B., A-422d, P-2567
Chapman, J. E., A-164f, P-2233; A-314e, P-1616
Chapman, L. F., A-379f, P-1315
Chappell, J. B., A-50d, P-891
Chargaff, E., A-353b, P-1388; A-359b, P-915
Charlier, A., A-133c, P-2526
Chart, J. J., A-177a, P-2412
Chase, A. M., A-216f, P-863
Chase, H. F., A-428d, P-1005
Chavin, W., A-223a, P-1549
Chaykin, S., A-47e, P-1555
Cheldelin, V. H., A-281b, P-817
Chelius, C. J., A-102e, P-359
Chen, F. P., A-30a, P-1496
Chen, G., A-323b, P-588
Chen, H. L., A-292a, P-1121
Chen, M.-L., A-8d, P-1699
Chen, W., A-173a, P-1609
Cheng, F. H., A-69b, P-1062
Chenoweth, M. B., A-294a, P-392
Cherayil, J. D., A-235a, P-866
Chernick, S. S., A-189f, P-80
Chernov, H. I., A-165d, P-1583
Chien, S., A-98d, P-1898
Chiga, M., A-356c, P-959
Chipchase, M., A-147f, P-795
Chirigos, M. A., A-169c, P-986
Cho, Y. S., A-224b, P-2132
Chobanian, A. V., A-174a, P-388
Choitz, H. C., A-3e, P-1424
Chow, B. F., A-203d, P-500; A-449b, P-1101; A-451c, P-498; A-451d, P-495
Chowdhury, S. R., A-303b, P-69
Chrambach, A., A-298e, P-1799
Christensen, H. N., A-140d, P-1458; P-1191
Christensen, L. R., P-1789
Christian, J. H., A-371a, P-2333
Christian, J. J., A-176a, P-1647; A-181e, P-2450
Christman, D. R., A-195e, P-313
Christner, J. E., A-271f, P-1522
Christy, N. P., A-176f, P-1849
Chryssanthou, C., A-261c, P-2760; A-261e, P-2754
Chu, I. S., A-446b, P-2356
Churg, J., A-114a, P-2287
Chusid, J. G., A-322f, P-1212
Ciaccio, E. I., A-87e, P-2074
Cifonelli, J. A., A-77f, P-1501
Cizek, L. J., A-198f, P-1819
Clancy, R. E., A-92b, P-619
Clark, H. E., A-371a, P-2333
Clark, R. S., A-444d, P-874
Clark, W. C., A-329e, P-1974
Clark, W. G., A-320c, P-2394
Clarke, D. A., A-156c, P-350; A-265b, P-1731
Clarke, D. D., A-342e, P-2627
Clarke, N. P., A-119a, P-1961
Clarkson, T. B., A-96a, P-575; P-1790
Clay, M., A-209e, P-1595
Claybrook, J. R., A-206a, P-857
Clayton, R. A., A-278c, P-335
Clayton, R. K., A-135d, P-2659
Clem, L. W., A-149e, P-89
Clemente, C. D., A-334c, P-1919
Clements, M., A-154d, P-1865
Clemmons, J. J., A-159f, P-1044
Cliffton, E. E., A-53c, P-1237
Clifton, J. A., A-243c, P-192; A-244c, P-337
Clifton, K. H., A-184b, P-1689
Clinton, R. O., A-198a, P-477
Clouet, D. H., A-307f, P-28
Cluff, L. E., A-21d, P-552
Coalson, R. E., A-143e, P-1637
Coates, H. V., A-436b, P-2769
Cochin, J., A-331a, P-1586
Cochrane, C. G., A-14c, P-2374
Code, C. F., A-244b, P-17; A-247b, P-1261
Coe, E., A-156d, P-349
Coe, E. L., A-359e, P-1998
Coffe, J. W., A-451a, P-494
Coggeshall, R. E., A-330b, P-1048
Cohan, P. H., A-300e, P-2509
Cohen, A. S., A-405a, P-2288
Cohen, B., A-339e, P-167
Cohen, B. D., A-340a, P-1976
Cohen, B. J., P-1785
Cohen, G., A-63b, P-2711; A-63c, P-2712
Cohen, H., A-417e, P-1947
Cohen, L. A., A-347e, P-168
Cohen, S., A-255b, P-841; A-288a, P-856
Cohn, D. V., A-76d, P-855
Cohn, J. E., A-421a, P-163
Cohn, V. H., Jr., A-258a, P-2232
Cohn, W. E., A-355f, P-1386
Cole, L. J., A-32e, P-534
Coleman, B., A-116d, P-687
Coleman, C. W., A-445c, P-2206
Coleman, J. E., A-220c, P-291
Coleman, R. L., A-44a, P-1394
Coles, M. P., A-449d, P-2319
Coley, V., A-158b, P-368
Collings, W. D., A-124f, P-1984
Collins, F. B., A-117c, P-1655; A-117d, P-1656
Collins, R. D., A-261b, P-2758
Colodzin, M., A-279e, P-945
Colowick, S. P., A-233b, P-290
Colville, K. I., A-313e, P-1622
Comar, C. L., A-292b, P-1448; A-354e, P-1128
Comb, D. G., A-351f, P-1493
Comer, J. F., A-437a, P-513
Commerford, S. L., A-358a, P-143
Comroe, J. H., Jr., P-1257
Comunale, J. V., A-295c, P-1029
Condie, R. M., A-26b, P-2380; A-160a, P-2381
Congdon, C. C., A-23e, P-2271; A-36c, P-536; A-402b, P-1415
Coniglio, J. G., A-402c, P-2026
Conklin, J., A-270b, P-472
Conn, E. E., A-373f, P-2045
Connamacher, R. H., A-344a, P-1836
Connelly, J. L., A-49e, P-887
Conney, A. H., A-173e, P-1034
Connor, W. E., A-54e, P-1662
Conrad, E. A., A-115b, P-688
Conrad, H., A-42d, P-1490
Conrad, H. E., A-48c, P-2164
Consolazio, C. F., A-373a, P-1085
Constantinides, P., A-92e, P-571
Contopoulou, R., A-272a, P-802
Converse, J. M., A-36a, P-532
Cook, B. B., A-371e, P-2328
Cook, C. D., A-426a, P-700; A-429f, P-2539
Cook, S. F., A-210f, P-2553
Coombs, T. L., A-221e, P-202
Coon, J. M., P-1017
Coon, M. J., A-271f, P-1522
Coons, A. H., A-17a, P-2391; P-1161
Cooper, D. Y., A-180f, P-1554
Cooper, K., A-308a, P-583
Cooper, R. G., A-60a, P-1857
Cooper, T., A-212c, P-1877; A-313f, P-1619
Cooperband, S., A-382f, P-2260
Cooperman, J. M., A-451b, P-499
Coots, R. H., A-273a, P-2020
Copley, A. L., A-53c, P-1237
Coppola, J. A., A-121d, P-1579
Corbin, K. B., P-1253, P-1257
Corcoran, J. B., A-431f, P-1443
Corcoran, J. W., A-273d, P-277
Corcoran, R., A-125d, P-212
Cordell, R. A., A-115b, P-688
Corey, E. J., A-48c, P-2164
Cori, C. F., A-86b, P-300
Corley, R. C., A-232e, P-925
Cormier, M. J., A-238c, P-2158
Cornatzer, W. E., A-280a, P-809; A-440f, P-1870
Cornblath, M., A-85f, P-2600
Cornelius, C. E., A-413f, P-1278
Cornell, W. P., A-133b, P-2519
Cornwell, D. G., A-452a, P-2057
Correll, J. W., A-275c, P-2506
Corrins, B., A-289e, P-460
Corson, E. O'L., A-348c, P-632
Corson, S. A., A-348c, P-632
Corwin, L. M., A-145a, P-2636
Coryell, M. E., A-4b, P-1508
Cosentino, A., A-426b, P-701
Costa, E., A-308b, P-1838; A-313a, P-983; A-319a, P-2173; A-322a, P-1840
Cotten, M. deV., A-122a, P-968; A-326f, P-969
Cottrell, M. C., A-283d, P-1830
Cotzias, G. C., A-295e, P-2295
Couch, J. R., A-270c, P-1116; A-297d, P-1717; A-370a, P-2312
Coulson, R. A., A-190b, P-79
Cournand, A., A-421b, P-157; A-421e, P-2520
Covino, B. G., A-209c, P-745
Cowan, F. F., A-317b, P-1617; A-317c, P-2220
Cox, B. L., A-177b, P-184
Cox, G. E., A-95a, P-572; A-248b, P-1058
Cox, L., A-95a, P-572
Coye, R. D., A-379c, P-1685
Cozine, R. A., A-129a, P-1994
Crabill, E. V., A-185e, P-237
Cragle, R. G., A-291e, P-1129; A-292f, P-1130
Craig, J. M., A-407f, P-2261; A-409a, P-1688
Craig, L. C., A-377d, P-1565
Craighead, J. E., A-446d, P-1138
Crampton, C. F., A-28c, P-2338
Crampton, R. S., A-177e, P-2405
Crane, F. L., A-45f, P-1395
Crane, R. K., A-140b, P-1453
Cranefield, P. F., A-126b, P-1295
Craven, G. R., A-449f, P-853
Craver, B. N., A-311e, P-1013
Crawford, E. J., A-168e, P-422
Crawford, M. N., A-66f, P-2363
Creasey, W. A., A-267d, P-944
Cronau, L., A-110a, P-1880
Cronheim, G., A-57d, P-2719
Cronin, J. R., A-44c, P-2007
Cronk, G. A., A-113f, P-395
Cronkite, E. P., A-68b, P-2449
Crook, J. R., A-261f, P-2752
Crosier, J. L., A-422b, P-2563
Crosley, A. P., Jr., A-410b, P-1629
Cross, C. E., A-123f, P-1347; A-124a, P-1348
Cross, E., A-366f, P-470
Croston, C. B., A-241a, P-1529
Crowell, J. C., A-116a, P-781
Crowle, A. J., A-258b, P-2802
Crowle, C. M., A-258b, P-2802
Crumpton, C. W., A-101d, P-1289; A-102e, P-359
Csáky, T. Z., A-139c, P-739
Cuculis, J. J., A-20a, P-2810
Cudkowicz, G., A-33f, P-427
Cuenca, E., A-322a, P-1840
Cullen, A. M., A-6b, P-2129
Culp, F. B., A-402c, P-2026
Cummings, D., A-21b, P-1759
Cunha, T. J., A-219d, P-2311
Cunningham, L., A-352f, P-2084
Cunningham, L. W., A-240f, P-924
Curren, J., A-218b, P-806
Currie, J. A., A-22b, P-1756
Czicman, J., A-305b, P-1217; A-305d, P-1841

D

DaCosta, F. M., A-319d, P-1615
DaCosta, W. A., A-381d, P-1436
D'adamo, A. F., Jr., A-274e, P-2022
D'Aguanno, W., A-432a, P-2221
Dain, J. A., A-269f, P-2150
Dakshinamurti, K., A-447f, P-331
D'Alesandro, P. A., A-12c, P-2280
Daliferes, E. R., Jr., A-163a, P-1411
D'Amato, C. J., A-330b, P-1048
Dammin, G. J., A-35d, P-432
Dandliker, W. B., A-11f, P-2807
D'Angelo, S. A., A-185c, P-234
Daniel, A. I., A-315c, P-2217
Daniels, J. R., A-2a, P-1815
Danielson, G. K., A-121c, P-787
Danilchenko, A., A-78e, P-2144
Dannenberg, A. M., Jr., A-264c, P-1751
Dansby, D., A-434c, P-1592
Daoud, A., A-91b, P-613; A-91d, P-614; A-91e, P-618
Dardin, V. J., A-432e, P-1598

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Darling, O. A., A-380e, P-1535
Darmody, W. R., A-331e, P-716
Darnell, J. E., Jr., A-1a, P-1868
Das, V. S. R., A-83c, P-2660
Das Gupta, B. R., A-431f, P-1443
Dasler, W., A-77d, P-504
Davenport, L., A-173b, P-387
Davidsohn, I., A-12b, P-1068; A-13c, P-1750
Davidson, E. A., A-162b, P-1409
Davidson, J. A., A-366b, P-1115
Davie, E., A-384f, P-2063
Davies, P. W., A-142c, P-720
Davies, R. E., A-251b, P-1452; A-270c, P-1116
Davis, A. K., A-401f, P-137
Davis, G. D., A-327c, P-1914
Davis, G. K., A-293d, P-1124; A-296e, P-510
David, H., A-365c, P-1090
Davis, J. O., A-178b, P-1844; A-178c, P-1845; A-178d, P-1847
Davis, J. R., A-156f, P-367; A-383f, P-352
Davis, J. T., A-402c, P-2026
Davis, J. W., A-389e, P-1471
Davis, K. J., A-432a, P-2221
Davis, L., A-221f, P-2104
Davis, R. B., A-261d, P-2755
Davis, R. H., A-158f, P-2757; A-419d, P-640
Davis, R. K., A-422b, P-2563
Davis, R. L., A-167f, P-2201
Davis, R. V., A-342f, P-2693
Davis, W. E., Jr., A-32f, P-534
Davis, W. W., A-83d, P-2097
Davisson, E. O., A-377a, P-1524
Davitt, J., A-410c, P-1627
Dawe, C. J., P-558
Dawson, C., A-436e, P-515
Day, S. M., A-136b, P-2235
Dayton, H. B., A-331d, P-1582
Dayton, P. G., A-173a, P-1609; A-173e, P-1034
Dean, W. H., A-327c, P-1914
DeArmas, D., A-100c, P-1908
Deatherage, F. E., A-241c, P-1094
Deavers, S., A-72e, P-786
de Bodo, R. C., A-188d, P-599; A-192f, P-34; A-193e, P-33
de Caputto, D. P., A-355c, P-958
DeEds, F., A-17e, P-2798
Deinhardt, F., A-442d, P-1728
Deitch, A., A-38c, P-1159
Dekker, E. E., A-3d, P-2633
DeKornfeld, T. J., A-309b, P-1008
Delahunt, C. S., A-435c, P-1600
Delaney, K., A-90a, P-400
Delaney, R., A-28e, P-1771; A-385a, P-2059
Delbruck, A., A-86f, P-1406
del Castillo, J., A-303d, P-249
Delgado, J. M. R., A-335f, P-2585
D'Elia, J. A., A-48a, P-2591
DeLuca, M., A-49c, P-888
Delwiche, C. C., A-350d, P-2034
Demopoulos, H., A-114b, P-2284; A-154d, P-1865
de Muelenaere, H. J. H., A-8d, P-1699
Denniston, R. H., A-331c, P-2580
Denton, A. E., A-364a, P-2326
Denton, C. A., A-367e, P-1202
Denyes, A., A-211c, P-750
DeOme, K. B., A-136c, P-9; P-559
DePhillipo, M., A-200f, P-2475
Depocas, F., A-213f, P-682
Derr, R. F., A-3c, P-1512
Desai, I., A-303c, P-2310
DeSchepper, P. J. M., A-193d, P-2096
Desiderio, V., A-251d, P-2736; A-251e, P-2738
Despopoulos, A., A-415a, P-669
Dessauer, H. C., A-72f, P-179
DeTar, R. L., Jr., A-328e, P-1174
Detert, A., A-446b, P-2356
Detrick, L. E., A-402d, P-2197
Detwiler, T. C., A-359a, P-1287
Deutsch, H. F., A-380f, P-829
DeVenuto, F., A-283c, P-1465
Devi, A., A-378d, P-790
DeWitt, J., A-83f, P-2595
Dhanutirto, F. I. H., A-129e, P-1993
Dhanutirto, R. H., A-129e, P-1993
Dialameh, G. H., A-228d, P-2055
Diamant, E. G., A-80f, P-303
Diamond, M., A-343d, P-2652
Diamondstone, T. I., A-218e, P-325
Dick, A. R., A-46c, P-2643
Dick, E. C., A-93d, P-856
Dickason, B., A-242b, P-14
Dickinson, W., A-25f, P-2350
Dickman, S. R., A-144e, P-2685
Didisheim, P., A-61a, P-612
Dieckmann, M., A-363d, P-1478
Diermeier, H. F., A-433e, P-1593
Dieter, B., A-64a, P-1060
Di Luzio, N. R., A-265f, P-1921; A-266f, P-2459; A-276b, P-2722
DiMaggio, A., III, A-175b, P-2103
Dimakulangan, A. A., A-288c, P-469
DiMartino, A., A-39e, P-2715
DiMascio, A., A-393c, P-60
Dingell, J. V., A-173c, P-1602
Di Palma, J. R., A-121d, P-1579
DiPaolo, J. A., A-154b, P-1080
Dippy, R. H., A-397e, P-2400
Dirksen, M. L., A-438e, P-2609
Dische, Z., A-78e, P-2144
DiStefano, V., A-314d, P-2468
DiTroia, J. F., A-286d, P-1286
Dixon, F. J., A-18d, P-1776; A-28b, P-1743
Dixon, G. J., A-155c, P-1074
Dixon, R. L., A-170d, P-416; A-170e, P-415
do Amaral, D., A-85e, P-2653
Dobrowolski, P., A-70e, P-2253
Dobson, E. L., A-121b, P-1902, A-265e, P-1922
Doctor, B. P., A-390c, P-1473
Dodgen, C. L., A-267b, P-180
Dodyk, F., A-217e, P-2124
Doe, R. P., A-179e, P-2139
Doebbler, G. F., A-149f, P-88
Doebbler, T. Y., A-39a, P-1154
Doeg, K. A., A-44f, P-1399
Doehr, S. A., A-65e, P-497
Doggett, M. C., A-175e, P-2481
Doherty, D. G., A-157f, P-2750; A-385d, P-2136
Doisy, E. A., P-1721
Doisy, E. A., Jr., A-365f, P-1716; P-1722
Dolan, T., A-375a, P-2661
Dolce, R. G., A-428a, P-2571
Dole, V. P., A-275e, P-2099
Dollery, C. T., A-107e, P-1358
Dominguez, A. M., A-215e, P-414
Dominguez, O. V., A-180d, P-2476
Domino, E. F., A-307b, P-1810; A-307c, P-1805; A-307d, P-1802
Donald, D. E., A-130f, P-151
Donaldson, K. O., A-453d, P-1516
Donermeyer, D. D., A-12a, P-2815
Donevan, R. E., A-131b, P-2528
Donohue, D. M., A-65b, P-1517
Donoso, H., A-421a, P-163
Doolan, P. D., A-4c, P-1423
Doolittle, R. F., A-53e, P-1229
Dorfman, A., A-163c, P-1407
Dorfman, R. I., A-238d, P-1462
Doria, G., A-36c, P-536
Doris, D. B., Jr., A-443f, P-1133
Dornfest, B. S., A-71c, P-1923
Doty, R. W., A-331a, P-1980
Doudoroff, M., A-272a, P-802
Dougherty, J. H., A-210c, P-2517
Douglas, J. F., A-113d, P-396
Douglas, R. D., A-446e, P-517
Douglas, W. W., A-324a, P-2171
Douglass, C. D., A-75f, P-1718; A-365e, P-1711; A-369a, P-1113
Doull, J., A-400c, P-2191; A-400d, P-2192
Dounce, A. L., A-147d, P-2682
Dowben, R. M., A-302e, P-2543
Dowell, A., A-332c, P-776
Downey, F., A-416b, P-129
Downing, M., A-449f, P-853
Downing, S. E., A-132b, P-690
Doy, C. H., A-10f, P-2126
Drabkin, D. L., A-378f, P-2265
Drakontides, A. B., A-308c, P-587; A-394a, P-1811; A-420c, P-1969
Draper, H. H., A-359a, P-1287
Draskóczy, P. R., A-315f, P-1612; A-316e, P-2215; A-316f, P-2214
Dray, S., A-32a, P-2370
Dreiling, D. A., A-252c, P-202
Drew, R. M., A-386c, P-2137
Driscoll, K., A-277b, P-2249
Drori, J. B., A-343d, P-2652
Dua, S., A-331c, P-2580
Dube, V., A-178a, P-1848
Dubert, A., A-40c, P-425
Dubin, A., A-93c, P-2461; A-411e, P-2189
DuBois, A. B., A-106a, P-754
DuBois, K. P., A-435e, P-1025
Dubos, R. J., A-364d, P-1712
Ducay, E. D., A-389d, P-2119
Dudley, H. R., A-77c, P-8
Duerre, J. A., A-3a, P-1509
Dufour, D., A-17d, P-543
Duggan, E. L., A-353a, P-2088
Duke, H. N., A-425e, P-162
Dumville, G., A-229b, P-2628
Duncan, B. A., A-155c, P-1074
Duncan, H., A-405d, P-664
Duncan, L. E., Jr., A-97c, P-581
Duncan, W. A. M., A-173c, P-1602
Dungan, A. L., A-372e, P-487
Dunlop, R. H., A-242a, P-1900
Dunn, A., A-188d, P-599; A-192f, P-34; A-193e, P-33
Dunn, M. J., A-326e, P-2211
Dunn, M. R., A-164b, P-1077
Dupian, J. F., A-37b, P-540
Duran-Reynals, M. L., A-444b, P-520
Durbin, R. P., A-134d, P-725
Dure, L. S., A-238c, P-2158
Dury, A., A-270e, P-2458
Dustin, J.-P., A-270d, P-1828
du Vigneaud, V., P-264
Dykman, R. A., A-348c, P-632
Dzinovic, S., A-324f, P-1308

E

Eades, C. G., A-310d, P-1587
Eagan, C. J., A-210b, P-742
Eagle, H., A-151d, P-1242
Eakin, R. E., A-206a, P-857
Earnhardt, E., A-204d, P-2100
Easley, C. W., A-74b, P-824
Easterday, O. D., A-433c, P-2231
Easton, D. M., A-347d, P-165
Easton, J., A-16d, P-99
Ebaugh, F. G., Jr., A-70d, P-2252; A-70e, P-2253
Ebersberger, E. M., A-320d, P-1209
Eckhardt, E., A-318a, P-2176
Eckstein, J. W., A-113a, P-1001; A-317a, P-393
Edelberg, R., A-326d, P-2590
Edelhoch, H., A-385e, P-931
Edelman, G. M., A-387d, P-1763
Edelman, I. S., A-137b, P-731; A-138f, P-736
Edelman, J. C., A-225f, P-1426
Eder, H. A., A-285e, P-2675
Ederstrom, H. E., A-98c, P-216
Edwards, A. W. T., A-422c, P-2568
Edwards, C., A-303f, P-248
Edwards, C. H., A-6f, P-1197
Edwards, G. A., A-6f, P-1197
Edwards, H. M., Jr., A-294c, P-509; A-294d, P-2415
Edwards, J. L., A-296e, P-510
Edwards, R. E., A-397c, P-56
Egdahl, R. H., A-190c, P-84
Eguchi, E., A-337d, P-1370
Ehrenpreis, S., A-306b, P-1211
Ehrlich, E., A-54c, P-2717
Eichelberger, L., A-127e, P-155
Eidelberg, E., A-322d, P-1208
Eidinoff, M. L., A-153b, P-1875
Eiduson, S., A-345b, P-1317
Eigner, E. A., A-1f, P-1477
Eik-Nes, K. B., A-197a, P-2477
Eiler, J. J., A-170c, P-2080
Eisenhardt, R. H., A-252e, P-1270
Eisenman, A. J., A-310e, P-1584
Eisenman, J. S., A-334d, P-1330; A-334e, P-1331
Eisenstein, A., A-176c, P-2411
Eitzman, D. D., A-213d, P-675
Elam, J. O., A-428e, P-2531
Elbein, A. D., A-78d, P-1566
Elder, T. D., A-196d, P-1434
Eldredge, N., A-343e, P-2143
Elenbogen, G., A-267f, P-1719
Eliakim, M., A-106e, P-1349
Elion, G. B., A-156b, P-962
Elko, E. E., A-276b, P-2722
Eller, J. L., A-425d, P-699
Ellinger, F., A-400b, P-2195
Elliott, D., A-406d, P-735
Elliott, W. B., A-42c, P-1489
Elliott, W. H., A-451f, P-2056
Ellis, C. H., A-313e, P-1622
Ellis, J. P., Jr., A-208a, P-2515
Ellison, L. T., A-425c, P-698
Ellison, R. G., A-425c, P-698
Ellison, T., A-93d, P-856; A-369e, P-2316
Eltherington, L. G., A-89d, P-1572
Emele, J. F., A-328d, P-1173
Emerson, C. P., A-63f, P-1069
Emerson, G. A., A-271d, P-1827
Emerson, G. M., A-188b, P-596; A-337c, P-724
Emerson, J. D., A-188b, P-596
Emmanuel, G., A-421b, P-157
Emmanuel, G. E., A-421c, P-2562
Emmart, E. W., A-16a, P-403
Endrőczi, E., A-187b, P-2474
Eng, L. F., A-435f, P-836
Engel, A. M., A-152a, P-578
Engel, L. L., A-179b, P-1464
Engel, M. B., A-143b, P-655
Englander, L. S., A-407a, P-2227
Englard, S., A-239d, P-803
Engleberger, F. M., A-27d, P-1762
Enson, Y., A-421e, P-2520
Epstein, F. H., A-406a, P-1321
Epstein, S. S., A-450d, P-854
Epstein, W. V., A-36f, P-2346
Ercoli, N., A-264a, P-2204
Erickson, R. P., A-336d, P-171
Eros, D. E., A-147b, P-654
Ervin, F., A-341f, P-1311; A-345c, P-715
Essler, W. O., A-129f, P-1988
Essman, W. B., A-214e, P-684
Estabrook, R. W., A-50c, P-890
Etsten, B., A-128b, P-1004; A-312a, P-981
Evans, E. A., Jr., A-444c, P-910
Evans, J. D., A-201d, P-2489
Evans, J. H., A-148a, P-2115
Evans, J. R., A-302c, P-2544
Evans, R. J., A-366b, P-1115
Evans, R. L., A-259c, P-2793
Evans, W., A-226e, P-2070
Evard, R., A-220f, P-928
Evarts, E. V., A-332e, P-1916
Everett, G. A., A-388a, P-1472
Everett, G. M., A-323e, P-585
Everse, J., A-221d, P-934
Exum, E. D., A-38b, P-1155
Eylar, E. H., A-62c, P-2135; A-62d, P-2134
Eytel, C. S., A-324e, P-2701
Eyzaguirre, C., A-345d, P-1373

F

Fahey, J. L., A-382e, P-346
Fairchild, E. J., A-203a, P-2223
Fairley, J. L., A-389c, P-2605
Falk, H. L., A-165b, P-1040
Falzone, J. A., Jr., A-147c, P-659
Fanelli, G. M., A-414b, P-667
Fanelli, R. V., A-313e, P-1622
Fang, H. S., A-195d, P-1221
Farah, A., A-407b, P-2183; A-411b, P-2186; A-417b, P-2184
Farber, M. B., A-27c, P-2341; A-40e, P-2388
Farhi, L. E., A-422c, P-2568; A-427f, P-2534
Faris, B., A-378a, P-2148
Farley, B., P-2497
Farquhar, J. W., A-279c, P-2146
Farr, R. S., A-14d, P-2813; A-25f, P-2350
Farrell, G. L., A-180b, P-1343
Farrison, W. L., A-242f, P-1671
Farrow, F., A-92f, P-2460; A-93a, P-2456
Farthing, B. R., A-207e, P-483
Faulkner, C., A-134b, P-2250
Faust, J., A-100c, P-1908
Fawcett, C. P., A-221c, P-2053
Faytol, A. B., A-434a, P-1020
Feaster, J. P., A-293d, P-1124
Featherston, W. R., A-7f, P-1708
Fedor, E. J., A-215b, P-677
Feeley, J., A-233c, P-2163
Feigelson, P., A-223c, P-2131
Feigen, G. A., A-11f, P-2807; A-259c, P-2793
Feigenbaum, A. S., A-366c, P-1114
Feigl, E. O., A-117f, P-1338
Feinberg, G., A-306f, P-2465
Feinberg, H., A-101a, P-1292
Feinberg, L., A-58f, P-1861; A-59a, P-1860
Feinberg, S. M., A-260b, P-2796
Feingold, D. S., A-79a, P-899
Feinstein, R. N., A-234f, P-919
Feisal, K. A., A-106a, P-754
Feiber, J.-P., A-221e, P-292
Feldman, J. D., A-203b, P-5
Feldman, M. G., A-252c, P-202
Feldman, R., A-451b, P-499
Feldman, S., A-330f, P-2473
Feldstein, A., A-291a, P-2417; A-291b, P-1031; A-403c, P-1033
Feldstein, Aaron, A-340e, P-22
Felger, C. B., A-199d, P-340

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Felix-Davies, D., A-17f, P-2276
Fellers, F. X., A-409a, P-1688; A-417c, P-1682
Felsenfeld, H., A-80e, P-1498
Felton, S. P., A-45e, P-2009
Fenster, E., A-343a, P-21
Ferguson, F. P., A-210e, P-2555
Ferguson, T. M., A-297d, P-1717
Fernando, V. P., A-409a, P-1688
Ferrari, R. A., A-284f, P-478
Ferreira, D., A-112c, P-1345
Fevold, H. R., A-197a, P-2477
Fiala, G., A-389f, P-2329
Fiala, J., A-400e, P-2193
Ficarra, J., A-162d, P-2599
Fielden, M. L., A-66a, P-2362
Filer, L. J., Jr., A-241f, P-2334; A-371b, P-2330
Finamore, F. J., A-356f, P-911
Finch, C. A., A-67d, P-1377
Fine, J., P-1196
Finger, K. F., A-323c, P-591
Fink, B. R., A-431a, P-1302
Fink, J., A-46b, P-306
Fink, K., A-303a, P-70
Finkel, M., A-253a, P-1268
Finkelman, F., A-298e, P-1799
Finkelstein, M., A-90a, P-400
Finkle, B. J., A-234c, P-2107
Finley, T., A-428c, P-2577
Finn, F. M., A-78b, P-1491
Finston, R., A-352e, P-2091
Firemark, H., A-329f, P-592
Firestone, D., A-369a, P-1113
Fischer, E. H., A-386a, P-2112
Fischer, G. A., A-358d, P-848
Fischer, J. J., A-170a, P-1604
Fischer, R. G., A-440f, P-1870
Fischer, S., A-68e, P-2689
Fiscus, W. G., A-34d, P-424
Fishberg, E. H., A-31b, P-1543
Fisher, B., A-215b, P-677
Fisher, E., A-115d, P-686
Fisher, E., Jr., A-219e, P-1557
Fisher, E. R., A-404b, P-2283
Fisher, H., A-55c, P-602; A-366c, P-1114
Fisher, H. F., A-230d, P-798
Fisher, H. W., A-150d, P-1241
Fisher, J. M., A-388b, P-2118
Fisher, J. W., A-68f, P-2713
Fisher, T. N., A-359c, P-913
Fishkin, A. F., A-159c, P-456
Fishman, A. P., A-106f, P-1357
Fishman, W. H., A-240d, P-864
Fisken, R. A., A-403a, P-2744
Fitch, F. W., A-21a, P-2272; A-24a, P-2274; A-63e, P-1056
Fitch, W. M., A-219b, P-1037
Fitzgerald, R. S., A-104f, P-757
Fitzhugh, O. G., A-432b, P-1019; A-432d, P-1018
Flaa, R. C., A-137d, P-194
Flack, H. A., A-134a, P-2244
Flanagan, J. F., A-445e, P-2355
Flavin, M., A-230c, P-285
Flax, M. H., A-258d, P-1775; A-263a, P-1
Fleischer, S., A-45d, P-2637
Fleisher, G. A., A-217d, P-1537
Fleisher, J. H., A-434a, P-1020
Fleming, W. W., A-316c, P-2709; A-316d, P-1613
Flesher, A. M., A-399a, P-2196
Flesher, J. W., A-199e, P-1812
Fletcher, A. P., A-58b, P-1859
Fletcher, J., A-89a, P-1990
Fletcher, M. J., A-146c, P-2688
Flick, D. F., A-75f, P-1718
Flick, J. A., A-263c, P-1761
Flickinger, G. L., A-176b, P-1648
Flickinger, G. L., Jr., A-91f, P-1649
Fliedner, T. M., A-68b, P-2449
Flock, E. V., A-204b, P-2043
Florentin, R. A., A-91b, P-613; A-91d, P-614
Florini, J., A-399d, P-1028
Floyd, K. W., A-400a, P-2194
Floyd, N. F., A-385b, P-321
Fluss, P., A-14f, P-377; A-155a, P-2207; A-352a, P-378
Fobar, P. J., A-156c, P-350
Folkes, F. F., A-233d, P-2177; A-236f, P-2167; A-393f, P-25
Folkes, V. M., A-233d, P-2177; A-236f, P-2167; A-393f, P-25
Foley, W. A., A-242e, P-647
Folk, G. E., Jr., A-129f, P-1988
Folk, J. E., A-217b, P-1525; A-384f, P-2063
Fomberg, E., A-335f, P-2585
Fong, C. T. O., A-195e, P-313
Fontaine, J., A-325f, P-707
Foote, J. L., A-271f, P-1522
Foote, L. E., A-296f, P-511
Forbes, R. M., A-203a, P-1126; A-296a, P-502
Force, E., A-158c, P-2768
Ford, L., A-46b, P-306
Foroff, O., A-180f, P-1554
Forscher, B. K., A-76d, P-855
Forster, R. E., A-424b, P-2561; A-425e, P-162; P-1251; P-1257
Forsyth, E., A-299f, P-2540
Forte, J. G., A-251b, P-1452
Foschi, G. V., A-37b, P-540
Foster, D. W., A-41d, P-2023
Foster, J. F., A-381c, P-822
Foster, J. M., A-65a, P-2073
Foster, R. J., A-230e, P-1533
Foster, W. C., A-294f, P-200
Foulkes, E. C., A-413d, P-2029
Fouts, J. R., A-170d, P-416; A-170e, P-415
Fowler, W. W., Jr., A-303b, P-69
Fox, A. S., A-353e, P-2083
Fox, C. L., Jr., A-401c, P-1887
Fox, H. M., A-284b, P-1203
Fox, W., A-72f, P-179
Fradkin, R., A-158d, P-2199
Fraenkel-Conrat, H., A-254d, P-882
Frahm, C. J., A-127a, P-146
Fram, D. H., A-321d, P-1168
Frank, A., A-277a, P-2726
Frank, C. W., A-424e, P-158
Frank, G. B., A-304a, P-404
Frankel, J. W., A-445c, P-2206
Franklin, D. L., A-97f, P-223; A-130e, P-2527
Franklin, E. C., A-13d, P-1150; A-31d, P-1147
Franklin, J. B., A-398b, P-2747
Franklin, R., A-154f, P-1866
Franko, B. V., A-251f, P-2739
Frantz, I. D., Jr., A-285c, P-2674
Franzblau, C., A-386d, P-2068
Franzl, R. E., A-26e, P-1744
Fraser, H. F., A-310c, P-1590
Frawley, J. P., A-432e, P-1598
Frazer, M., A-417b, P-2184
Frazier, D., A-333d, P-777
Frazier, L. E., A-94c, P-2247; A-94d, P-2246
Fredrickson, D. S., A-270d, P-1828
Freed, R., A-219c, P-2294
Freedberg, A. S., A-298d, P-1796
Freedman, D. X., A-321d, P-1168
Freedman, J. K., A-225c, P-2624
Freeman, H., A-304e, P-23; A-392c, P-2470
Freese, E., A-352d, P-2086
Fregly, M. J., A-112a, P-1346
Freiman, D. G., A-237a, P-657
Freimer, E. H., A-29e, P-549
Freireich, E. J., A-141b, P-1645
French, A. B., A-242b, P-14
French, S. W., A-445a, P-2762
Freund, J., A-131c, P-2518
Freundlich, M., A-225a, P-2127
Fridman, J., A-107b, P-1351
Fridovich, I., A-42a, P-1397
Fried, G. H., A-261e, P-2754
Fried, M., A-388d, P-2121
Friedberg, F., A-381d, P-1436
Friedberg, W., A-401d, P-139
Friedell, G. H., A-63f, P-1069
Friedemann, T. E., A-398f, P-2655
Frieden, E., A-229d, P-2105
Frieden, E. H., A-166f, P-1534
Friedkin, M., A-168e, P-422; A-361e, P-1521
Friedler, G., A-187f, P-1691; A-288b, P-1054
Friedman, D. I., A-36e, P-538
Friedman, E. A., A-33d, P-431; A-35d, P-432
Friedman, Leo., A-365e, P-1711; A-369a, P-1113
Friedman, Leonard, A-236e, P-1530
Friedman, M., A-92c, P-570
Friedman, M. H. F., A-252f, P-1267
Friedman, R. M., A-258c, P-2382
Friedman, S. M., A-114d, P-1344
Friedrich, B. W., A-8b, P-1705
Friesen, H., A-183b, P-594
Frisell, W. R., A-44c, P-2007
Fritts, H. W., Jr., A-105c, P-1307
Frohman, C., A-79e, P-1546
Fromm, H. J., A-229f, P-2108
Frost, J., A-325b, P-2403
Frumento, A. S., A-142b, P-1934
Fruton, J. S., P-263
Fry, P. C., A-284b, P-1203
Fuchs, M., A-410d, P-1623
Fudema, J. J., A-304c, P-405; A-395e, P-24
Fueger, G. F., A-439d, P-548
Fujimoto, A., A-79f, P-2651
Fujimoto, J. M., A-171d, P-1036; A-171e, P-1035
Fulco, A. J., A-274b, P-2021
Fuller, R. C., A-88e, P-895
Fulton, G. P., A-119c, P-138
Funderburk, W. H., A-308c, P-587; A-323c, P-591; A-394a, P-1811
Funkhouser, G. E., A-211e, P-752
Furness, P., A-394e, P-111
Furth, J., A-184b, P-1689; A-184c, P-1690
Furth, J. J., A-363e, P-1999
Furusho, A., A-425f, P-702
Fuscone, A., A-97a, P-621

G

Gabbert, P. C., A-191c, P-32
Gabel, L. P., A-209e, P-1595
Gabourel, J. D., A-148f, P-421
Gabriel, A. R., A-451c, P-498
Gabriel, O., A-87d, P-1412
Gabrieli, E. R., A-266a, P-2251
Gaby, W. L., A-279d, P-819
Gaddone, S. M., A-27d, P-1762
Gadsden, E. L., A-6f, P-1197
Gaebler, O. H., A-3e, P-1424
Gaffney, T. E., A-123a, P-964; A-313f, P-1619
Gagliano, E., A-59b, P-2432
Gaines, S., A-22b, P-1756
Gaintner, J. R., A-61d, P-1169
Galambos, R., A-326a, P-1975
Galansino, G., A-314a, P-1903
Galbreath, W., A-122b, P-971
Galdi, F., A-308e, P-1010
Galindo, P., A-438f, P-1137
Gallagher, M., A-29c, P-2281
Gallo, L., A-75f, P-1718
Gallop, P. M., A-386d, P-2068
Galyean, J. R., III, A-117c, P-1655; A-117d, P-1656
Gambescia, J., A-251d, P-2736; A-251e, P-2738
Gamble, J. L., Jr., A-145e, P-663
Gamble, W., A-49a, P-1468
Gan, Jose C., A-379b, P-2120
Ganis, F. M., A-399c, P-2742
Gannon, C., A-215d, P-2557
Ganong, W. F., A-177d, P-1846; A-178e, P-1851
Gantt, W. H., A-89b, P-1989
Garb, S., A-23c, P-2716
Garcia, E., A-156d, P-349
Gard, D. A., A-157d, P-2200
Gardier, R. W., A-111e, P-1578
Gardner, R. E., A-34b, P-1071; A-428c, P-2577
Gardner, W. U., A-188a, P-1219
Garey, W., A-103c, P-2524
Garner, G. B., A-372e, P-487
Garner, H. R., A-78d, P-1566
Garry, B. J., A-225b, P-2128
Garst, J. B., A-180b, P-1343
Garvey, J. S., A-22c, P-2383
Garvin, J. E., A-71e, P-50
Garvin, P. J., A-206d, P-1596; A-267f, P-1719
Gascon, A., A-257a, P-442
Gaskins, J. R., A-141b, P-1645; A-392e, P-2398
Gasteiger, E. L., A-347f, P-244
Gatgounis, J., A-89e, P-364
Gault, F. P., A-322d, P-1208
Gaylor, J. L., A-285b, P-2671
Gee, M. V., A-298a, P-2147
Gee, R., A-375a, P-2661
Gehenio, P. M., A-51f, P-1381
Geiduschek, E. P., A-353f, P-2087
Geiger, A., A-341a, P-2299
Geiling, E. M. K., A-432a, P-2221
Gelfand, R., A-430d, P-1966
Gell, P. G. H., A-17f, P-2276
Geller, E., A-345b, P-1317
Geller, L. M., A-328f, P-1365
Gemmill, C. L., A-202f, P-2488
Gengozian, N., A-36c, P-536
Gentry, G. A., A-444f, P-2351
Gentry, J. R., A-349a, P-172
George, M., A-331d, P-1582
George, P., A-69e, P-2615
Gerard, R. W., A-392d, P-1218
Gerber, C. F., A-244a, P-2732
Gerber, C. J., A-304e, P-722
Gergely, G., A-299e, P-1797
Gerhart, J. C., A-224f, P-847
Gershbein, L. L., A-237c, P-2593
Gershoff, S. N., A-373a, P-1085
Gerst, E. C., A-422f, P-689
Gerst, P. H., A-105d, P-760
Gerszi, K., A-99d, P-1280
Gertler, M. M., A-147a, P-2071
Gertner, S. B., A-319c, P-1620
Geschwind, I. I., A-189b, P-87
Gesler, R. M., A-206d, P-1596; P-568
Gessa, G. L., A-308b, P-1838; A-313c, P-983
Geyer, R. P., A-152f, P-1248
Giarman, N. J., A-141f, P-1641; A-321d, P-1168; P-68
Gibbs, M., A-87f, P-2662
Gibson, D. M., A-274a, P-274
Giebish, G., A-413a, P-125
Gifford, C. A., A-405c, P-178
Gijon, E., A-318f, P-2172
Gilbert, R., A-430f, P-1964
Gilfillan, R. F., A-161b, P-454; A-162c, P-455
Gillette, J. R., A-173b, P-387; A-173c, P-1602
Gilmore, J. P., A-126d, P-148; A-126e, P-1621; A-407d, P-765
Gilon, E., A-285e, P-2675
Gilson, S. B., A-73f, P-830
Gilvarg, C., A-10a, P-2632
Ginn, H. E., A-405f, P-1325
Ginsberg, H. S., A-445e, P-2355; A-445f, P-2354
Ginsberg, T., A-113d, P-396
Ginsburg, V., A-84c, P-903
Giordano, P., A-274f, P-2504
Girardier, L., A-339d, P-719
Girling, F., A-89a, P-1990
Gittleson, S. M., A-142f, P-2448
Giuffre, N., A-148d, P-1460
Giunta, P. D., A-399c, P-2742
Giuntini, C., A-105c, P-1307
Gjessing, E. C., A-233f, P-1527
Glabman, S., A-415c, P-131
Gladfelter, W. E., A-334b, P-1912
Gladner, J. A., A-384f, P-2063
Glaser, L., A-84b, P-905
Glass, G. B. J., A-449e, P-496; A-450b, P-2720
Glasser, S. R., A-197f, P-598
Glauser, E., A-427d, P-2529
Glaviano, V. V., A-116d, P-687
Glazer, A. N., A-380b, P-1442
Gledhill, A., A-443a, P-1734
Glenister, D. W., A-184f, P-233
Glenn, W. G., A-20b, P-2803
Glick, D., A-178f, P-293
Glick, M. C., A-163e, P-1499
Gluckman, M. I., A-324d, P-1842
Glusman, M., A-327f, P-2579
Gochenour, W. S., Jr., A-266e, P-1135
Godbey, A. L., A-28c, P-2338
Goddard, R. F., A-429b, P-2575
Godfrey, J. E., A-385f, P-1235
Godman, G. C., A-440e, P-1166
Goerner, M., A-74c, P-820
Gold, A. J., A-208c, P-2556; A-210e, P-2555
Gold, E., A-344f, P-2466; A-394c, P-2467
Gold, H., A-410f, P-2187
Gold, J. J., A-174e, P-2478
Gold, M., A-276a, P-950
Gold, P. H., A-228d, P-2055
Goldberg, J. A., A-152d, P-652
Goldbaum, L. R., A-215e, P-414
Goldberg, A. H., A-123a, P-964
Goldberg, B., A-16d, P-99
Goldberg, G. R., A-77a, P-2422
Goldberg, H. L., A-190c, P-84
Goldberg, L. I., A-318d, P-1615
Goldberg, N. D., A-128a, P-1571
Goldberg, S., A-174e, P-2478
Goldberger, R., A-45c, P-1483
Goldblatt, A., A-120c, P-679
Goldenberg, G. J., A-281d, P-353
Goldfarb, A. R., A-31a, P-1152
Goldfarb, S., A-248a, P-1057; A-289c, P-1056
Goldfeder, A., A-216b, P-660
Goldfien, A., A-178e, P-1851
Goldfine, H., A-273f, P-2028
Goldie, H., A-153f, P-1698
Goldin, A., A-168d, P-423; A-168e, P-422; A-169c, P-986
Goldman, D. E., A-338b, P-239
Goldman, D. S., A-43e, P-2008
Goldman, H., A-237a, P-657
Goldmar, L., A-127b, P-176
Goldmann, M., A-363e, P-1999

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Goldschneider, I., A-18c, P-553
Goldsmith, N. F., A-162d, P-2599
Goldstein, A., A-394f, P-58
Goldstein, D. A., A-439c, P-833
Goldstein, L., A-319f, P-1806
Goldstein, M. H., A-403e, P-670
Goldstein, M. S., A-190d, P-35
Goldthwait, D. A., A-144f, P-791
Golfinos, A., A-410f, P-2187
Golinko, R. J., A-133d, P-1360
Gollan, F., A-213e, P-678
Gollub, S., A-54c, P-2717; A-54d, P-1667; A-55d, P-2435
Gombos, G., A-341a, P-2299
Gomez, R., A-370c, P-1700
Gonzalez, E., A-33c, P-434
Gonzalez, J. V., A-112a, P-1346
Good, R. A., A-26c, P-1144; A-36e, P-538; A-408c, P-2262
Goodale, F., A-91b, P-613; A-91c, P-1664
Goodall, McC., A-182c, P-1607
Goodland, R. L., A-58c, P-1856
Goodman, A., A-406a, P-1321
Goodman, D. S., A-285a, P-2672
Goodman, H. M., A-183f, P-601
Goodman, H. O., A-95c, P-576
Goodman, I., A-387b, P-2064
Goodman, J. W., A-32f, P-541; A-36c, P-536
Goodman, M., A-31c, P-1145; A-38a, P-1783
Goodsell, E. B., A-170f, P-2228
Gootman, N. L., A-133d, P-1360
Gordon, A. S., A-68a, P-1382; A-71c, P-1923
Gordon, B. A., A-248e, P-475
Gordon, E. E., A-64e, P-2049; A-82d, P-2078
Gordon, J., A-377f, P-930
Gordon, M., A-356e, P-838
Gordon, M. S., A-208d, P-183
Gordon, P., A-302e, P-2543; A-315a, P-385
Gordon, R. S., Jr., A-244e, P-13
Gordon, S., A-399d, P-1028
Gordon, Spencer, A-343b, P-1778
Gorlin, R., A-127d, P-1298
Gorski, R. A., A-187a, P-238
Gorstein, F., A-14b, P-2369; A-40d, P-1156
Goshi, K., A-21d, P-552
Gosselin, R. E., A-324e, P-2701; A-144b, P-1640
Goth, A., A-257b, P-2238
Gots, J. S., A-358e, P-960
Gott, V. L., A-127c, P-154
Gottfried, E. L., A-278f, P-2152
Gottlieb, J., A-79e, P-1546
Gottlieb, L. I., A-379c, P-1685
Gottlieb, L. S., A-290c, P-1050
Gottlieb, S. F., A-420b, P-2578
Gotto, A. M., A-375c, P-2017
Gottschall, G. Y., A-364d, P-1712
Goucher, C. R., A-355b, P-957
Gould, D. M., A-400a, P-2194
Govardhan, L. K., A-448c, P-1103
Gozsy, B., A-256e, P-2237
Graber, C. D., A-21b, P-1759
Grace, J. T., Jr., A-39c, P-1157; P-562
Graham, J. B., A-61f, P-51
Grande, F., A-96c, P-1199; A-96d, P-1200
Granick, S., A-378c, P-2614
Grant, C. T., A-363c, P-845
Grant, R. L., A-79c, P-83
Grant, Rhoda, A-250b, P-112
Grant, Ronald, A-336c, P-711
Grauer, R. C., A-152b, P-1240
Graves, S., A-326b, P-379
Gray, J. L., A-58a, P-2431
Gray, R. R., A-78f, P-2307; A-81a, P-2094
Greaney, J. F., A-343f, P-941
Greco, A. E., A-356d, P-1392
Green, H., A-16d, P-99
Green, H. D., A-100d, P-1905; A-110c, P-1904
Green, J., A-125d, P-212
Green, J. A., A-210d, P-2554
Green, J. D., A-341c, P-1361
Green, J. P., A-136b, P-2235
Green, J. R., A-231a, P-287
Green, J. W., A-143a, P-653
Green, R., A-252f, P-1267
Green, S., A-240d, P-864
Greenbaum, L. M., A-235b, P-1526
Greenberg, D. M., A-227e, P-1519
Greenberg, L. D., A-256d, P-1201
Greenberg, L. J., A-178f, P-293
Greenberg, R., A-284d, P-2062
Greenberg, S. M., A-93d, P-856; A-369e, P-2316
Greenblatt, E. N., A-397b, P-623
Greene, D. G., A-428e, P-2531
Greengard, O., A-223b, P-2133
Greengard, P., A-167d, P-974
Greenman, J., A-215d, P-2557
Greenshields, R. N., A-220e, P-1447
Greenspan, J., A-126b, P-1295
Greenwald, I., A-202b, P-2033
Greenwalt, K. E., A-417f, P-1942
Greenwalt, T. J., A-66f, P-2363
Greer, S., A-255e, P-875
Gregg, C. T., A-50f, P-886
Gregoire, F., A-416e, P-1279
Greif, R. L., A-201c, P-1182
Grenell, R. G., A-341f, P-1311
Greslin, J. G., A-419e, P-641
Griffen, W. O., Jr., A-248c, P-650; A-249f, P-120
Griffin, D. R., A-327d, P-709
Griffith, M., A-279f, P-943
Griffith, T., A-374d, P-1561
Griffith, W. H., A-303b, P-69
Griffiths, D. E., A-44e, P-1487
Grillo, M. A., A-6e, P-2780
Griminger, P., A-55c, P-602
Grindeland, R., A-183c, P-635
Grinnell, A. D., A-327d, P-709
Grisolia, S., A-222e, P-923
Grodsky, G. M., A-52e, P-610; A-189b, P-87
Grollman, A. P., A-417d, P-1276
Grose, F., A-267f, P-4
Gross, F., A-112e, P-1342
Gross, L., A-164d, P-445
Gross, P. R., A-360b, P-916
Grossberg, A., A-108b, P-1766
Grossberg, S. E., A-442b, P-1727
Grossman, L., A-353c, P-834
Grosvenor, C. E., A-205a, P-1189
Groupé, V., A-439f, P-2767
Gruen, J., A-36d, P-537
Grumbach, L., A-165d, P-1583
Grunberg-Manago, M., A-363a, P-1995
Grundfest, H., A-339b, P-2550; A-339c, P-166; A-339d, P-719; A-339e, P-167
Grupp, G., A-141a, P-996
Gubler, C. J., A-218a, P-288; A-448a, P-2646
Gude, W. D., A-25b, P-2345
Guerra, F., A-46b, P-306
Guest, M. M., A-56b, P-1854; A-59d, P-2429; A-59f, P-1855; A-60a, P-1857
Guevrekian, L., A-397f, P-55
Guillemin, R., A-165d, P-636
Gullino, P. M., A-153e, P-1697
Gump, F., A-244f, P-195
Gumtow, R. H., A-243f, P-2733
Gundersen, K., A-191a, P-82
Gunsalus, I. C., A-48c, P-2164
Gunther, H., A-357f, P-843
Gupta, G. N., A-200c, P-342
Gupta, N. K., A-4a, P-868
Gurin, S., A-284a, P-2679
Gut, M., A-238d, P-1462
Gutierrez-Saenz, R., A-109b, P-768
Gutman, A. B., A-416a, P-665
Guttes, E., A-419b, P-2447
Guttes, S., A-419b, P-2447
Guttmann, R. D., A-33b, P-533; A-33e, P-1693
Guyer, K. E., A-452a, P-2057
Guyton, A. C., A-108e, P-764; A-120a, P-1891, A-120f, P-1892
Guz, A., A-133c, P-2526
Guzman, F., A-310f, P-406
Guzman, S. V., A-102c, P-1297
Guzman-Flores, C., A-330c, P-173
Gyenes, L., A-13e, P-2812
Gyermek, L., A-319b, P-2700; A-306b, P-100
Gylys, J. A., A-328c, P-1172

H

Haavik, A. G., A-43f, P-1400
Habel, K., A-35f, P-1738
Haber, E., A-217f, P-939
Habermann, H. M., A-88b, P-2669
Hack, M. H , A-278e, P-2151
Haddy, F. J., A-99f, P-225
Haft, D., A-274e, P-2022
Hagan, E. C., A-432d, P-1018
Hagen, J. H., A-275b, P-2505
Hagen, P., A-183a, P-2702
Hager, D., A-127e, P-155
Hager, L. P., A-216c, P-1567
Hagerman, D. D., A-223e, P-1431
Haggard, M. E., A-365c, P-1090
Hagihira, H., A-243d, P-15
Hahn, C. H., A-83a, P-2077
Haise, S. M., A-199b, P-2479
Hakim, A. A., A-108c, P-766; A-415f, P-1271
Halac, E., Jr., A-75d, P-1459
Halberg, F., A-305e, P-1213
Halbert, S. P., A-41a, P-1146; A-265d, P-1757
Hale, H. B., A-208a, P-2515
Haley, E. E., A-379a, P-1421
Haley, T. J., A-339a, P-2196
Halkerston, I. D. K., A-177c, P-1852
Hall, B. D., A-362a, P-914
Hall, C. E., A-112b, P-1650; A-166a, P-1651
Hall, F. G., A-213c, P-674
Hall, M. O., A-279a, P-818
Hall, O., A-112b, P-1650; A-166a, P-1651
Hall, W. K., A-4b, P-1508
Hall, W. P., A-76a, P-2423
Hall, Y., A-97a, P-621
Halpern, B. P., A-338a, P-1363
Halver, J. E., A-241a, P-1529; A-290e, P-1076
Halvorson, H. O., A-388e, P-792
Hamann, J. F., A-426a, P-700
Hamerman, D., A-163f, P-2303
Hamilton, J. G., A-277c, P-1822; A-367d, P-2457
Hamilton, L. H., A-423a, P-2565
Hamilton, R. L., A-97d, P-2293
Hamilton, W. F., A-109a, P-770
Hammarsten, J., A-264b, P-1041
Hammel, H. T., A-103c, P-2524; A-334d, P-1330; A-335a, P-1334
Hammer, H. F., A-244a, P-2732
Hammon, W. M., A-37a, P-1873
Hampton, A., A-361c, P-953
Hampton, E. G., A-153b, P-1875
Hance, H. E., A-208c, P-2558
Handler, A. H., A-34f, P-1692
Handler, P., A-42a, P-1397; A-228a, P-2052; P-2694
Handschumacher, R. E., A-267d, P-944
Hankin, L., A-267d, P-944
Hanlon, C. R., A-212c, P-1877
Hanna, L., A-436e, P-515
Hannon, J. P., A-209d, P-747
Hanowell, E. G., A-425b, P-164
Hansard, S. L., A-296f, P-511
Hansen, A. E., A-365c, P-1090; A-366e, P-1112
Hansen, E. L., A-369c, P-2205
Hansen, C. L., Jr., A-399b, P-2746
Hansen, H. J., A-450f, P-493; A-451a, P-494
Hansen, H. W., A-366d, P-2789
Hansen, J. T., A-132f, P-2521
Hansen, R. G., A-84e, P-902
Hansen, W. H., A-287e, P-1053
Hanson, A. S., A-122d, P-965
Hanson, H. M., A-396a, P-53
Hanson, R. W., A-204f, P-1185
Hardesty, W. H., A-106b, P-1353
Harding, C. V., A-360b, P-916
Harding, H. R., A-181d, P-1853
Hardman, J., A-4d, P-2634
Hardwick, D. F., A-76a, P-2423
Hardy, J. D., A-334d, P-1330; A-335a, P-1334; A-410b, P-1886; P-1327
Hardy, James D., A-116b, P-779
Hardy, J. L., A-444a, P-1132
Hardy, W. W., A-449e, P-496
Harkness, D. R., A-357a, P-1385
Harmel, M. H., A-132a, P-695; A-420e, P-1809
Harmison, C. R., A-55e, P-1233
Harold, F. M., A-135c, P-907
Harper, A. E., A-3f, P-332; A-8d, P-1699; A-96e, P-1198; A-245f, P-1702
Harrah, J., A-406d, P-735
Harris, A. F., A-165c, P-446
Harris, A. S., A-129e, P-1993
Harris, C., A-72a, P-1064
Harris, J. B., A-138f, P-736
Harris, L. S., A-395f, P-630
Harris, S., A-27c, P-2341; A-40e, P-2388
Harris, T. N., A-27c, P-2341; A-40e, P-2388
Harrison, E., A-183c, P-635
Harrison, H. C., A-292d, P-199; A-417d, P-1276
Harrison, H. E., A-292d, P-199; A-417d, P-1276
Harshman, S., A-233a, P-2113
Hart, E. R., A-324d, P-1842; A-333a, P-1372
Hart, H., A-73b, P-2032; A-295d, P-1610
Hart, J. J. D., A-328c, P-1172
Hart, L. G., A-170e, P-415
Harter, J. G., A-17a, P-2391; A-259b, P-2799
Hartley, W. J., P-2322
Hartman, H., A-239e, P-1556
Hartmann, H. A., A-435a, P-1045
Hartmann, K.-U., A-167a, P-849
Hartmann, R., A-48c, P-2164
Hartnett, J. C., A-233f, P-1527
Hartroft, P. M., A-404e, P-2286; A-404f, P-2285
Hartroft, W. S., A-288c, P-469; A-288d, P-2264
Hartwig, Q. L., A-72f, P-179
Hartzell, G. W., Jr., A-252e, P-1270
Harvey, C. C., A-269a, P-1108; A-367b, P-1825
Harvey, R. B., A-108f, P-762
Harwalker, V. R., A-6c, P-2039
Hasegawa, E., A-86f, P-1406
Hashim, S. A., A-248d, P-651
Hashimoto, Y., A-87c, P-1495
Hass, G. M., A-35b, P-430; A-35c, P-429; A-290b, P-1079; A-355d, P-2291
Hassam, D., A-424a, P-2559
Hasselbrack, R., A-246d, P-1262
Hassert, G. L., Jr., A-311e, P-1013
Hassid, W. Z., A-79a, P-899
Hata, B., A-449a, P-1100
Hatch, M. D., A-273e, P-273
Hatefi, Y., A-43f, P-1400
Hauck, F. P., A-323b, P-588
Haugaard, E., A-80a, P-2072
Haugaard, N., A-80a, P-2072; A-127f, P-1000
Haurowitz, F., A-21f, P-2384; A-389b, P-2116
Hausberger, F. X., A-373c, P-1956
Hauser, A. D., A-403e, P-670
Hawkins, H. C., A-434c, P-1592
Hawthorne, E. W., A-88f, P-149; A-115c, P-153; A-132c, P-150
Hayaishi, O., A-3b, P-2130
Hayano, M., A-238d, P-1462
Hayashida, T., A-189b, P-87
Hayflick, L., A-18c, P-553; A-150b, P-90
Haynes, R. C., Jr., A-181c, P-2407; A-182b, P-2409
Hayward, J. N., A-205e, P-2584
Healey, W. V., A-100a, P-1899
Hearn, W. R., A-186a, P-231
Hecht, H. H., A-106c, P-1355; A-430e, P-1965
Hechter, O., A-177c, P-1852
Hedenstrom, P. H., A-101b, P-1290
Hedin, P. A., A-448f, P-2315
Hefner, L. L., A-125d, P-212
Hegnauer, A. H., A-125b, P-208
Heidelberger, C., A-167a, P-849
Heilman, D. H., A-260f, P-2202
Heimberg, M., A-276d, P-2728
Heinz, E., A-193a, P-41
Heise, G. A., A-393b, P-1171
Heisler, C. R., A-50f, P-886
Heisterkamp, D., A-70e, P-2253
Heldenmuth, L., A-255e, P-875
Helinski, D., A-255a, P-2603
Hellegers, A., A-422e, P-704
Heller, B. S., A-358f, P-850
Hellerman, L., A-83b, P-2076
Helmkamp, G., A-352b, P-2092
Helvey, W. M., A-342a, P-1316
Hemingway, A., A-334f, P-1332
Hemmingsen, E., A-103c, P-2524
Hempling, H. G., A-139a, P-1930
Henderson, F. G., A-251a, P-118
Henderson, I. W. D., A-158a, P-1082
Henderson, L. M., A-5c, P-2125; A-448e, P-1097
Hendler, E., A-401b, P-1886
Hendler, R. W., A-390b, P-324
Hendley, C. D., A-327b, P-2402
Hendley, D. D., A-298a, P-2147
Hendrickson, M. W., A-399c, P-2743
Henle, W., A-442d, P-1728
Henley, K. S., A-41e, P-2075
Hennigar, G. R., A-92a, P-453
Henry, L. B., A-33d, P-431; A-354, P-432
Henry, R. J., A-247e, P-1545
Hensel, S. L., A-127d, P-1298

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Bridges, J. F., Jr., A-219d, P-2311
Herbert, V., A-453c, P-1104
Herzog, S. A., A-60d, P-1232
Herd, J. A., A-101c, P-1300
Herman, M., A-343e, P-2143
Hernandez, T., A-190b, P-79
Heroux, O., A-215c, P-748
Herrera, M. G., A-368a, P-2453
Herrington, K., A-353c, P-834
Herrmann, R. L., A-363c, P-845
Herron, C. S., Jr., A-420a, P-2596
Hershovitz, T. T., A-386b, P-2065
Hertig, B. A., A-211f, P-1337
Hertting, G., A-167c, P-23
Hertzler, E. C., A-317d, P-1843
Hertzman, A. B., A-110a, P-1880
Herz, F., A-152e, P-1250
Herzog, W. H., A-297c, P-410
Hess, E. L., A-175a, P-1427
Hess, H. H., A-342d, P-1494
Hess, M. E., A-127f, P-1000
Hess, S. M., A-344a, P-1836
Hesse, R. H., A-177f, P-343
Hesser, G., A-327a, P-1981
Hicks, S. P., A-330b, P-1048
Hiebrink, B. E., A-435e, P-1025
Higashi, T., A-364d, P-1712
Higginbotham, R. D., A-263d, P-1784
High, E. G., A-453a, P-2786
Highman, B., A-322c, P-108
Higman, H., A-305f, P-1210
Hilal, S. K., A-72c, P-661; A-399e, P-141
Hilf, R., A-185a, P-1430
Hill, A. S., Jr., A-63a, P-2392
Hill, C. H., A-447c, P-1106
Hill, E. G., A-271c, P-1111
Hill, J., A-197d, P-1425
Hill, J. M., A-74c, P-820
Hill, R. J., A-69f, P-2616
Hillard, J., A-187b, P-2474
Hilmoe, R. J., A-357a, P-1385
Hilton, J. G., A-177e, P-2405
Hilton, James G., A-326e, P-2211
Himel, C., A-252e, P-1270
Hinrich, H. E., A-305c, P-1215; P-62
Hinrich, W. A., A-394b, P-104
Hinrichsen, I., A-449a, P-1100
Hinshaw, L. B., A-108c, P-766; A-409c, P-673
Hinson, J., A-220b, P-2015
Hirata, A. A., A-22e, P-2386
Hirch, C., A-308b, P-1838
Hirsch, H. E., A-342c, P-2683
Hirsch, J., A-269c, P-2155
Hirsch, L. J., A-267f, P-1719
Hirsch, P. F., A-194c, P-2491
Hirschfeld, T. J., A-48d, P-2490
Hirschowitz, B. I., A-246b, P-1263
Hirvonen, L., A-104b, P-220; A-104c, P-221
Hislop, H. J., A-305a, P-2510
Hitchings, G. H., A-227f, P-2054
Hjort, P. F., A-56a, P-44
Ho, M., A-442c, P-1733
Hoag, W. G., A-54f, P-605
Hoagland, H., A-305b, P-1217
Hoberman, H. D., A-274e, P-2022
Hochella, N. J., A-81d, P-294
Hochstein, P., A-63b, P-2711; A-63c, P-2712
Hockwald, G. M., A-25a, P-2344
Hodes, R., A-332f, P-773
Hoffer, P. B., A-104f, P-757
Hoffman, B. F., A-126a, P-204; A-130b, P-210
Hoffman, J. F., A-137f, P-730
Hoffman, J. I. E., A-133c, P-2526
Hofmann, F. G., A-176f, P-1849; A-181a, P-2406
Hofmann, K., P-266
Hogan, A. F., A-113e, P-1573
Hogben, C. A. M., A-139e, P-737
Hoggan, M. D., A-426d, P-521
Hogness, D. S., A-438d, P-876
Holaday, D. A., A-429a, P-2530
Holbrook, D. J., Jr., A-148a, P-2115
Holburn, R. R., A-54b, P-2718; A-277f, P-2501
Holden, M., A-15a, P-519
Holland, J. J., A-442b, P-1727
Holland, W. C., A-128d, P-995; A-318b, P-2175
Hollander, F., A-249a, P-1266; A-249b, P-1265, A-252b, P-10
Hollander, V. P., A-199c, P-1813
Hollander, W., A-174a, P-388
Holley, J. C., A-6f, P-1197
Holley, R. W., A-388a, P-1472
Holliday, M. A., A-406d, P-735
Hollmann, S., A-84f, P-897
Holloszy, J., A-176c, P-2411
Holloway, R. J., A-286a, P-1284
Hollunger, G., A-50a, P-892
Holman, J. E., A-178b, P-1844
Holman, R. T., A-271c, P-1111
Holmdahl, M. H., A-75e, P-1611; A-424a, P-2559
Holmes, J. O., A-291f, P-1127; A-292a, P-1121; A-292e, P-1122
Holmgren, A., A-423b, P-697
Holt, J. P., A-110e, P-692
Holtkamp, D. E., A-158f, P-2757; A-419d, P-640; A-419e, P-641
Holtz, M. T., A-358f, P-850
Homburger, F., A-288b, P-1054
Honda, S., A-146f, P-309
Hong, R., A-20e, P-2805
Hongladarom, T., A-146f, P-309
Honig, G. R., A-156f, P-367
Hook, S. A., A-450a, P-852
Hopkins, D. T., A-367a, P-1110; A-368e, P-1118
Hopkins, T. F., A-183e, P-643; A-186b, P-1225
Hoppert, C. A., A-375e, P-1560
Hopps, H. C., A-12f, P-2270
Horecker, B. L., A-84d, P-2649
Horibata, K., A-3b, P-2130
Horio, T., A-45b, P-2665
Horita, A., A-172a, P-26
Hormazabal, J., A-449b, P-1101
Horn, L., A-301d, P-727
Hornbein, T. F., A-430b, P-1971
Horning, M. G., A-276f, P-2725; A-277a, P-2726
Horovitz, Z., A-324d, P-1842
Horowicz, P., A-304e, P-722
Horowitz, M. I., A-249a, P-1266
Horton, E. W., A-310f, P-406
Horvath, A., A-5d, P-282
Horwitt, B. N., A-179c, P-338
Horwitt, M. K., A-269a, P-1108; A-323a, P-31; A-367b, P-1825
Hoshiko, T., A-126f, P-203; A-142e, P-733
Hoskins, L. C., A-243b, P-12
Hotchin, J., A-443a, P-1734
Hotchkiss, D. J., Jr., A-402f, P-2745
Houck, J. C., A-161c, P-1528
Houde, R. W., A-311b, P-1009
Houpt, T. R., A-349d, P-2336
Housepian, E. M., A-333b, P-772; A-325d, P-771
Houston, S., A-153f, P-1698
Howard, H., A-277d, P1823
Howe, C., A-440e, P-1166
Howell, E. V., A-159e, P-2770
Howell, G. B., A-11a, P-2774
Howie, N., A-177a, P-2412
Howland, J. W., A-399b, P-2746; A-399c, P-2742
Hoy, N. J., A-20a, P-2810
Hoyer, L. W., A-38e, P-1781
Hruban, Z., A-136e, P-3
Hsia, S. L., A-263b, P-2681
Hsiung, G. D., A-446a, P-1732
Hsu, J. M., A-203d, P-500; A-44b, P-1101
Hsu, K. C., A-15a, P-519; A-38c, P-1159; A-288a, P-656
Hu, F., A-223a, P-1549
Huang, K. C., A-246a, P-2734; A-416f, P-2182
Huang, R. C., A-362c, P-2003
Huang, T., A-138d, P-1309
Huang, T. C., A-95b, P-574
Hubbard, D. D., A-274a, P-274
Hubbard, N., A-376b, P-2613
Hubert, C. E., A-301b, P-1794
Huckabee, W. E., A-131e, P-693
Hucker, H. B., A-172f, P-993
Hudack, E. D., A-147b, P-654
Hudson, R. D., A-307d, P-1802
Huebner, C. F., A-308e, P-1010
Huebsch, R., A-326c, P-1081
Huennekens, F. M., A-45e, P-2009; A-453f, P-1530
Huff, J., A-356e, P-838
Huggins, C. G., A-153c, P-369; A-253d, P-2730
Huggins, R. A., A-72e, P-786
Hugh-Jones, P., A-107e, P-1358
Hughes, A. M., A-445a, P-2762
Hughes, J. R., A-332b, P-1362
Hughes, R. C., A-386a, P-2112
Hughes, R. H., A-94c, P-2247; A-94d, P-2246
Hughes, W. L., A-358a, P-143; A-416e, P-1279
Huh, K., A-331e, P-716
Hulett, B. J., A-270c, P-1116
Hull, C., A-327a, P-1981
Hull, C. G., A-108e, P-764
Humbel, R. E., A-190e, P-40
Hume, D. M., A-34a, P-435
Humphrey, E. W., A-142d, P-1940
Hunt, V. R., A-166d, P-2263
Hunter, F. E., Jr., A-46b, P-306
Hunter, J., A-79b, P-36
Hurlbert, R. B., A-361d, P-846
Hurt, J. P., A-57f, P-47
Hurwitz, C., A-351c, P-909
Hurwitz, J., A-363e, P-1999
Hurwitz, L., A-143e, P-1637
Hutcheon, D. E., A-411c, P-1634
Hutchison, C. A., P-2699
Hutterer, F., A-137a, P-467; A-288e, P-2; A-289b, P-1052
Hyde, J. E., A-331b, P-1909
Hyde, P. M., A-180c, P-1340; A-181f, P-1646
Hyde, R. W., A-424b, P-2561; A-425e, P-162

I

Iacono, J. M., A-277d, P-1823
Iatridis, S. G., A-58e, P-2426
Ickes, C. E., A-64b, P-860
Ikeda, K., A-303f, P-248
Ilk, S. G., A-211b, P-2552
Illingworth, B., A-86b, P-300
Ilves, S. M., A-79a, P-899
Imagawa, D. T., A-436a, P-2764
Imai, H., A-90b, P-2242
Imamoglu, K., A-248c, P-650
Impellizzeri, C., A-434b, P-1597
Imperial, E. S., A-131d, P-691
Imsande, J., A-227d, P-2051
Inchiosa, M. A., Jr., A-298d, P-1796
Inesi, G., A-80a, P-2072
Ingerman, M. L., A-233e, P-929; A-351d, P-840
Ingle, D. J., A-290a, P-466
Inglis, N. I., A-240d, P-864
Ingraham, J. S., A-26a, P-1739
Ingraham, L. L., A-230a, P-1553
Ingram, G. I. C., A-57e, P-48
Ingram, M., A-399b, P-2746
Ingram, W. A., A-382d, P-322
Inman, O. R., A-398a, P-140
Inman, R. B., A-354b, P-2090
Iriuchijima, J., A-97e, P-1901
Irvin, J. L., A-148a, P-2115
Irwin, M. I., A-267e, P-471
Irwin, R. L., A-174c, P-1603
Irwin, S., A-396e, P-105; A-396f, P-2465
Isaacson, A., A-301a, P-2547
Isbell, H., A-310c, P-1590
Iseri, O. A., A-133e, P-1659
Ishiko, N., A-346b, P-1367
Isselbacher, K. J., A-245c, P-18
Ito, E., A-228e, P-380
Ito, Y., A-438a, P-1874
Ivy, A. C., A-250d, P-115
Iwai, K., A-453e, P-1514
Iwert, M. E., A-370b, P-2318
Izzo, J. L., A-197f, P-598
Izzo, M. J., A-58c, P-1856

J

Jackson, B., A-135f, P-372
Jackson, C. H., A-67f, P-1380
Jackson, D. C., A-335a, P-1334
Jackson, D. P., A-61d, P-1169
Jackson, R. L., A-341e, P-1312
Jacobs, E., A-45f, P-1395
Jacobs, F. A., A-137d, P-194
Jacobs, H. L., A-207b, P-491
Jacobs, L. B., A-85a, P-2650
Jacobs, R. J., A-340c, P-1310
Jacobs, S. L., A-247e, P-1545
Jacobson, A. L., A-370b, P-2318
Jacobson, B., A-162a, P-901
Jacobson, E. D., A-251c, P-2737
Jacobson, F. H., A-215a, P-1329
Jacobson, H. I., A-199e, P-1812
Jacobson, M. M., A-313e, P-1622
Jacques, J. A., A-138c, P-1929
Jaffe, E. R., A-64e, P-2049
Jagodzinski, R. V., A-420b, P-2578
Jahiel, D. B., A-149c, P-1238
Jahiel, R., A-149c, P-1238
Jahn, T. L., A-144c, P-2444
Jahnes, W. G., A-439e, P-1142
Jakoby, W. B., A-232c, P-1558
James, J. A., A-412f, P-1678
Jamieson, J. D., A-114d, P-1344
Janecek, J., A-112c, P-1345
Janoff, A., A-117e, P-784
Janowitz, H. D., A-253a, P-1268
Janssen, E., A-244c, P-337
Jaques, L. B., A-55f, P-604
Jaques, W. E., A-118c, P-1666
Jarboe, C. H., A-416f, P-2182
Jardetzky, C. D., A-355a, P-851
Jarett, L., A-189d, P-1669
Jaroslow, B. N., A-17c, P-2339
Jarowski, C. I., A-7d, P-1704
Jarvik, M. E., A-340b, P-625
Jarvis, J. F., A-111a, P-1987
Jarvis, K., A-341b, P-240
Jasmin, G., A-257a, P-442
Jasmin, R., A-281e, P-2670
Jauch, V., A-97a, P-621
Javid, J., A-53a, P-2433
Jawetz, E., A-436e, P-515
Jay, B. E., A-422d, P-2567
Jean, P., A-194a, P-2492
Jedeikin, L. A., A-303d, P-2545
Jeffay, H., A-379b, P-2120
Jeffrey, J. J., A-141d, P-1643; A-141e, P-1644
Jehle, H., A-233e, P-929; A-391c, P-788
Jencks, W. P., A-377f, P-930
Jenkins, V. K., A-401d, P-139
Jenkins, W. T., P-261
Jenner, P. M., A-432d, P-1018
Jennings, R. B., A-134a, P-2244; A-206d, P-1596
Jensen, C. E., A-189c, P-2723
Jensen, E. V., A-199e, P-1812
Jensen, K. E., A-446c, P-2357
Jerram, D. C., A-314c, P-2212
Jervis, G. A., A-38f, P-1782
Jessup, D. C., A-432f, P-1024
Johansen, K., A-110b, P-1878
Johnson, A. B., A-5e, P-2040
Johnson, A. J., A-59c, P-1858
Johnson, B. C., A-8a, P-1703; A-114c, P-1205; A-296a, P-502; A-372b, P-488; A-450e, P-492; A-452d, P-2791; A-452f, P-2783
Johnson, C. E., A-326f, P-969
Johnson, F. B., A-92f, P-2460
Johnson, H., A-68d, P-1601
Johnson, H. F., A-292e, P-1122
Johnson, J. A., A-142d, P-1940
Johnson, J. M., A-62e, P-1606
Johnson, J. W., A-29f, P-514
Johnson, K. M., A-436c, P-2358
Johnson, L. F., Jr., A-429e, P-2535
Johnson, P. B., A-207d, P-1204
Johnson, R. E., A-95f, P-1826; A-328f, P-1365
Johnson, R. M., A-280d, P-2024
Johnson, S. A., A-52c, P-611
Johnson, T. F., A-93a, P-2456
Johnson, W. H., A-186d, P-236
Johnson, W. J., A-281e, P-2670
Johnston, C. L., Jr., A-56a, P-44
Jones, A. W., A-117f, P-1338
Jones, E. L., A-449e, P-496
Jones, E. M., A-207d, P-1204
Jones, J., A-354d, P-2085
Jones, J. H., A-448c, P-1103
Jones, M., A-102c, P-1297
Jones, M. E., A-240c, P-869
Jones, R., P-2498
Jones, R. D., A-104a, P-219
Jones, R. S., A-40b, P-1061; A-159e, P-2770; A-261f, P-2752
Jones, S. L., A-203e, P-1184
Jones, W. I., A-432c, P-988
Jonsson, S. A., A-164b, P-1077
Jordan, R. T., A-31e, P-1149
Jordan, W. S., Jr., A-441c, P-1165
Joseph, N. R., A-143b, P-655
Josephson, A. S., A-13d, P-1150
Joshi, G., A-375a, P-2661
Joshi, J. G., A-228a, P-2052
Joshi, S., A-391e, P-1480
Josse, J., A-354a, P-1387
Jourdian, G. W., A-161f, P-1497
Ju, J. S., A-245d, P-11
Julian, F. J., A-338b, P-239
Jurtshuk, P., Jr., A51d, P-801
Jutton, D. R., A-364e, P-484

K

Kabat, E. A., A-67a, P-2366
Kaesberg, P., A-384a, P-831
Kahler, R. L., A-120c, P-679
Kahn, J. B., Jr., A-196e, P-2710

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Kain, M. L., A-429a, P-2530
Kaji, A., A-233b, P-290
Kaji, H., A-190a, P-37
Kalan, E. B., A-384d, P-2062
Kaley, G., A-114b, P-2284
Kalf, G. F., A-20f, P-555
Kalle, G. P., A-358e, P-960
Kalman, S. M., A-2a, P-1815; A-200d, P-1816
Kalnitsky, G., A-236e, P-1530
Kalser, S. C., A-392b, P-412
Kamal, T. H., A-291e, P-1129; A-292f, P-1130
Kamen, M. D., A-45b, P-2665
Kamin, H., A-47d, P-2012
Kanai, T., A-331d, P-2587
Kanamori, M., A-11b, P-2775
Kanavage, C. B., A-52a, P-1536
Kandutsch, A. A., A-282d, P-2677
Kaneda, T., A-273d, P-277
Kanegis, L. A., A-171b, P-987; A-433e, P-1593
Kanfer, J., A-279b, P-1450
Kantrow, V. S., A-159c, P-456
Kao, C. Y., A-297e, P-1938
Kao, F. F., A-132a, P-695; A-420e, P-1809
Kao, K. Y. T., A-161e, P-2123
Kapadia, G., A-280d, P-2024
Kaplan, A. S., A-440a, P-2353
Kaplan, H. S., A-40c, P-425; P-557
Kaplan, J. G., A-135a, P-2443
Kaplan, M. H., A-39b, P-1160; A-263e, P-1758
Kaplan, N. O., A-221d, P-934
Kara, M., A-222d, P-2598
Karaca, M., A-60f, P-1863
Karczmar, A. G., A-321a, P-624; A-321b, P-1021; A-321c, P-1022; A-324b, P-1804
Kare, M. R., A-338a, P-1363
Karis, J., A-130b, P-210
Karl, I. E., A-287d, P-1714
Karler, A., A-169d, P-1016; A-286f, P-1027
Karmen, A., A-244e, P-13
Karnovsky, M. L., A-226e, P-2070
Karpovich, P. V., A-300e, P-2509
Kasper, C. B., A-380f, P-829
Kato, H., A-250e, P-116
Kato, L., A-256e, P-2237
Katz, E., A-405f, P-1325
Katz, E., A-217c, P-1569
Katz, H. P., A-92a, P-453
Katz, L. N., A-93b, P-2463; A-101a, P-1292; A-107b, P-1351
Katz, R. A., A-348a, P-1264
Katz, R. L., A-431a, P-1302; A-431b, P-1963
Katz, S., A-400b, P-2195
Katzman, P. A., A-199d, P-340
Katzung, B. G., A-121f, P-963
Kauffman, D. L., A-385c, P-1444
Kaufman, B. T., A-454b, P-1518
Kaufman, N., A-2b, P-1042; A-291d, P-1059
Kaufman, W. C., A-426e, P-2532
Kaunitz, H., A-95f, P-1826; A-328f, P-1365
Kavaler, F., A-129b, P-1985
Kawamura, Y., A-334f, P-1332
Kawasaki, H., A-78e, P-2144
Kawata, H., A-41e, P-2075
Kay, C. M., A-382a, P-1445
Kay, E. R. M., A-389a, P-2117
Kazal, L. A., A-57b, A-49
Keane, K. W., A-364a, P-2326
Keary, F. V., A-398d, P-134
Keasling, H. H., A-373d, P-1175
Keatinge, S., A-265d, P-1757
Keatinge, W. R., A-110d, P-680
Keats, A. S., A-308f, P-1585
Kee, F. L., A-386c, P-2137
Keels, D., A-60b, P-2427
Keenan, R. E., A-122c, P-967
Kegeles, G., A-20c, P-318
Keil, J., A-80d, P-280
Keith, H. B., A-104e, P-1359
Kellaway, P., A-325b, P-2403
Keller, D. L., A-87e, P-2074
Keller, P. J., A-220e, P-1447
Kellermeyer, R., A-226b, P-295
Kelley, A., A-396d, P-110
Kelley, J. J., A-384a, P-831
Kelley, T., Jr., A-288b, P-1054
Kelley, T. F., A-73c, P-828
Kelley, W. N., A-326f, P-969
Kellogg, R. H., A-406b, P-1319
Kelly, H. M., A-208d, P-183
Kelly, L. S., A-71a, P-1926; A-265e, P-1922
Kelly, R. G., A-171b, P-987; A-399d, P-1028
Kelly, W. D., A-18b, P-2801; A-214c, P-681; A-253c, P-1670
Kemnitz, D. A., A-279e, P-945
Kemp, J. W., A-344e, P-29
Kennedy, E., P-2440
Kennedy, E. P., A-290a, P-466
Kennedy, T., A-337a, P-1920
Kenney, M. A., A-452e, P-2790
Kenny, A. D., A-182e, P-2707; A-316c, P-2709
Kensler, C. J., A-414e, P-2179
Kent, G., A-287c, P-459
Kent, J. F., A-18e, P-530
Kent, S. P., A-16b, P-7
Kepes, A., A-255f, P-1454
Keplinger, M. L., A-432e, P-1598
Keresztesy, J. C., A-453d, P-1516
Kerur, L., A-280d, P-2024
Kessel, D., A-142a, P-1635
Kessler, G. A., A-79a, P-899
Kessler, J., A-253a, P-1268
Keston, A. S., A-135e, P-873
Ketchel, M. M., A-402a, P-136
Ketchum, J. L., A-372e, P-487
Kety, S. S., P-67
Keyl, M. J., A-414a, P-668
Keys, A., A-96d, P-1200
Khan, B. T., A-268d, P-339
Khazin, A., A-186e, P-235
Khorana, H. G., A-351a, P-1390
Khym, J. X., A-355f, P-1386
Kielley, W. W., A-299c, P-77
Kies, C., A-8e, P-1710
Kies, M. W., A-262f, P-2278; A-343b, P-1778
Kight, M. A., A-282b, P-1206
Kihara, H. K., A-388e, P-792
Kilbourne, E. D., A-441e, P-1726; A-442f, P-1736
Kilham, L., A-264d, P-1752
Kilmore, M. A., A-428d, P-1005
Kim, D. L., A-95d, P-617
Kim, J. K., A-430c, P-1303
Kim, K., A-223a, P-1549
Kim, K. S., A-95d, P-617
Kim, U., A-184c, P-1690
Kind, L. S., A-259e, P-2794
Kindel, P. K., A-81f, P-2662
King, H. E., A-329a, P-1972
King, J. S., Jr., A-66a, P-2362
King, R., A-300c, P-2551
King, R. L., A-336d, P-171
King, T. E., A-46a, P-2639
King, T. P., A-30f, P-1153
King, W. M., A-159a, P-2756; A-419e, P-641
Kinnard, W. J., A-102d, P-362
Kinney, T. D., A-2b, P-1042; A-291d, P-1059
Kinross-Wright, J., A-397a, P-20
Kinsell, L. W., A-270b, P-472
Kinsman, G., A-164a, P-2302; A-361f, P-2301
Kinter, W. B., A-413e, P-666
Kirk, J. E., A-90e, P-582
Kirk, M., A-2c, P-1707
Kirk, S., A-118b, P-407
Kirksey, A., A-294e, P-508
Kirkwood, S., A-204a, P-2041
Kirschenbaum, D. M., A-234a, P-1531
Kirsh, D., A-16e, P-551; A-16f, P-550
Kirsner, J. B., A-13a, P-649; A-13b, P-648
Kishimoto, U., A-346f, P-247
Kissel, J. W., A-309f, P-1011
Kit, S., A-354c, P-2089
Kitabchi, A. E., A-452b, P-2165
Kitai, S. T., A-340a, P-1976
Kitay, J. I., A-176d, P-1850
Kitchin, A. H., A-130f, P-151; A-132d, P-152
Kite, J. H., Jr., A-149f, P-88
Kitos, P. A., A-151f, P-1245
Kivy-Rosenberg, E., A-403b, P-2741
Klain, G. J., A-208e, P-749
Klapper, J. A., Jr., A-229c, P-1532
Klausner, H., A-276d, P-2728
Klavins, J. V., A-2b, P-1042; A-291d, P-1059
Klebanoff, S. J., A-202e, P-2042
Kleckner, H., A-314a, P-1903
Klein, C., A-285e, P-2675
Klein, E., A-237b, P-2292; A-277b, P-2249
Klein, J. R., A-64c, P-2030
Klein, L., A-227c, P-1051
Klein, R. L., A-128c, P-997
Kleinberg, S. I., A-268e, P-2727
Kleinschmidt, W. J., A-441d, P-1867
Klerman, G. L., A-393c, P-60
Kletzkin, M., A-113c, P-398
Kliman, A., A-66d, P-2361
Kling, A., A-335c, P-2581; A-335d, P-2582
Klioze, O., A-244a, P-2732
Klip, W., A-337c, P-724
Klitgaard, H. M., A-201b, P-1188; A-216a, P-2594
Klostergaard, H., A-20d, P-2804
Klouwen, H., A-45d, P-2637
Klussmann, F. W., A-114f, P-217
Knapp, D. E., A-307c, P-1805
Knapp, P. G., A-323f, P-626
Knigge, K. M., A-185b, P-232
Knight, V., A-436c, P-2358
Knobil, E., A-183f, P-601
Knoefel, P. K., A-416f, P-2182
Knox, A. W., A-15a, P-519
Knox, P. R., A-312f, P-979
Kobayashi, Y., A-237f, P-2159
Koblick, D. C., A-139d, P-734
Koch, A. L., A-391d, P-328
Koch, A. R., A-108d, P-763
Kochakian, C. D., A-197d, P-1425
Koechlin, B. A., A-171a, P-1177
Koehelik, I. H., A-359f, P-844
Koehn, C. J., A-447a, P-1102
Koelle, W. P., A-305b, P-1217; A-305d, P-1841
Koelle, G. B., A-344d, P-1176
Koenig, E., A-344d, P-1176
Koenig, V. L., A-380c, P-2060
Koeppe, O. J., A-231f, P-2046
Koeppe, R. E., A-83a, P-2077
Koffler, H., A-78d, P-1566
Kohen, E., A-156e, P-370
Kohldahl, J., A-71f, P-1864
Kohler, H., A-177f, P-343
Kohler, J. H., Jr., A-125e, P-144
Kohler, P. F., A-74e, P-1151
Kolke, M., A-238b, P-800
Kokatnur, M. G., A-368b, P-1109
Koketsu, K., A-298c, P-1638; A-346d, P-246
Kokubu, T., A-149a, P-577; A-149b, P-452
Koler, R. D., A-69d, P-2620
Koll, K., A-293e, P-1937
Komalahiranya, A., A-317f, P-1618
Komarov, S. A., A-250a, P-121
Komesu, N., A-399a, P-2196
Kondratas, B., A-411d, P-1633
Konigsberg, W., A-69f, P-2616
Kopeloff, L. M., A-322f, P-1212
Koppanyi, T., A-317b, P-1617; A-317c, P-2220
Koppelman, R., A-444c, P-910
Koprowski, H., A-38f, P-1782; A-265c, P-1134
Korchak, H. M., A-272f, P-2508
Koritz, S. B., A-179f, P-1463
Korman, S., A-222d, P-2598
Kornberg, A., A-361b, P-2004
Kornberg, S. R., A-360f, P-2611
Kornetsky, C., A-311a, P-1586
Kornfeld, S., A-84b, P-905
Kornhauser, M., A-208c, P-2558
Kornstad, L., A-151a, P-96
Koroxenidis, G. T., A-130d, P-2522
Korson, R., A-62f, P-1070
Koshland, D. E., Jr., A-220d, P-927
Koshland, M. E., A-27d, P-1762
Kosinski, M., A-112d, P-1341
Kosmin, M., A-102a, P-1296
Kosovsky, J. D., A-412c, P-671
Kosowsky, J., A-445d, P-2359
Kostellow, A. B., A-222c, P-2601
Kostyo, J. L., A-188c, P-595
Kot, P. A., A-98b, P-1893
Kotin, P., A-165b, P-1040
Koukol, J., A-373f, P-2045
Koushanpour, E., A-124f, P-1984
Kraemer, R., A-313b, P-982
Krahl, M. E., A-193c, P-2098
Krakoff, L., A-98d, P-1898
Krakow, G., A-228b, P-2016
Krakow, J. S., A-361a, P-2005
Krall, A. R., A-88b, P-2669
Kramer, M. L., A-410f, P-2187
Krampitz, L. O., P-260
Krampl, V., A-375e, P-1560
Krantz, J. C., Jr., A-102f, P-363; A-312b, P-978
Krasna, A. I., A-239e, P-1556
Krasnow, N., A-127d, P-1298
Kraus, B. S., A-253e, P-1668
Kraus, S. D., A-196b, P-1818
Krause, R. F., A-269b, P-2784
Krause, R. M., A-29e, P-549; A-30b, P-1772
Krauser, F., A-177a, P-2412
Krawiec, J., A-251d, P-2736; A-251e, P-2738
Krebs, E. G., A-386a, P-2112
Krebs, J. S., A-286b, P-1281
Krech, D., A-343d, P-2652
Kreider, M. B., A-214d, P-1336
Kretchmar, A. L., A-402b, P-1415
Krieger, C. H., A-364a, P-2326
Krim, M., A-442f, P-1736
Krinks, M. H., A-398e, P-314
Krishnaswamy, P. R., A-229b, P-2628
Kritchevsky, D., A-283d, P-1830
Kroc, R. L., A-202a, P-1183
Kröger, H., A-362e, P-2000
Krohn, H. F., A-301d, P-727
Krueger, H., A-48f, P-889
Krueger, R. C., A-48b, P-1552; A-358a, P-143
Kruger, S., A-307e, P-2169
Krukowski, M., A-194d, P-457; A-194e, P-458
Kruse, R., A-407b, P-2183
Kubista, T., A-252e, P-1270
Kuby, S. A., A-218a, P-288
Kuchinskas, E. J., A-4e, P-1506
Kuchler, R. J., A-152b, P-1240
Kuehne, R. W., A-266e, P-1135
Kueter, K. E., A-165f, P-590
Kuff, E. L., A-390a, P-1470
Kuhlman, A. M., A-80f, P-303
Kuhn, C., A-404f, P-2285
Kuida, H., A-106c, P-1355
Kuksis, A., A-248e, P-475
Kulka, J. P., A-118f, P-440
Kumar, S., A-364c, P-2317
Kummerow, F. A., A-284d, P-580; A-284e, P-1117; A-368b, P-1109
Kunin, C. M., A-441c, P-1165
Kuno, S., A-3b, P-2130
Kuntz, E., A-376f, P-2069
Kuntzman, R., A-308b, P-1838; A-311a, P-2173; A-322a, P-1840
Kunze, F. M., A-199b, P-2479
Kuperman, A. S., A-304b, P-409
Kupfer, S., A-412c, P-671
Kupferberg, H., A-309d, P-1581
Kupke, D. W., A-377e, P-311
Kuramoto, K., A-108a, P-1958
Kurbatov, T., A-105b, P-755
Kurnick, A. A., A-363f, P-2788
Kurnick, N. B., A-404d, P-1684
Kuron, G. W., A-268c, P-2462
Kurosawa, Y., A-238d, P-1462
Kurtz, S. M., A-203b, P-5
Kury, L., A-154c, P-1696
Kushner, I., A-263e, P-1758
Kussick, L., A-98a, P-1890
Kutkam, T., A-264b, P-1041; A-294b, P-1683
Kutob, S. D., A-433a, P-1026
Kuzuo, N., A-139f, P-188
Kwit, N. T., A-410f, P-2187
Kwong, E., A-369f, P-2329
Kyker, G. C., A-275f, P-949
Kylander, H., A-398a, P-140

L

Laatsch, R. H., A-343b, P-1778
Labbe, R. F., A-376b, P-2613
LaBrosse, E. H., A-169a, P-1214
Lack, L., A-247d, P-196
Lacy, P. E., A-81f, P-1673; A-169d, P-1669; A-191d, P-1672
La Du, B. N., A-5b, P-2044
LaFauci, G., A-34f, P-1692
LaFont, F., A-292a, P-1121
Lagerkvist, U., A-363d, P-1478
Laird, R. D., A-277e, P-1119
Lakshmanan, F. L., A-367f, P-1634
Lalezari, P., A-71d, P-1924
Lalich, J. J., A-118d, P-1043; A-431a, P-1045
Lam, K. W., A-229a, P-2304
Lambertsen, C. J., A-212e, P-1881; A-430d, P-1966
Landaburu, R. H., A-55e, P-1233
Landau, B. R., A-191f, P-86
Landowne, R. A., A-281f, P-2153
Lands, W. E. M., A-280c, P-812
Landy, J. J., A-369b, P-481
Landy, M., A-262b, P-2371
Lane, C. E., A-405c, P-178
Lang, C. A., A-47b, P-2014
Lang, J. H., A-381e, P-1446
Langdon, R. G., A-231d, P-861
Lange, K., A-40a, P-2268

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Lange, R. L., A-106c, P-1355; A-430e, P-1965
Langford, H. G., A-2f, P-2778
Langille, J., A-175c, P-1547
Langston, J. B., A-108e, P-764
Lanphier, E. H., A-424c, P-2560
Laragh, J. H., A-410e, P-1630
Lardy, H. A., A-224e, P-858
Larner, J., A-193f, P-297
Larrabee, A., A-9e, P-1510
Larsen, T. J., A-409d, P-1628
Larson, A. M., A-209d, P-747
Larson, R. L., A-9f, P-1419
Larson, W., A-156d, P-349
Lasagna, L., A-309a, P-1006; A-410a, P-1624
Laskowski, M., A-353d, P-1393
Laskowski, M., Jr., A-386b, P-2065
Laster, L., A-247f, P-1282
Latham, K., A-79e, P-1546
Laties, V. G., A-395a, P-57; A-395b, P-59
Latta, H., A-402d, P-2197
Lau, E. W., A-371e, P-2328
Laudat, P., A-270d, P-1828
Lauffer, M. A., A-439c, P-833
Lauler, D. P., A-415e, P-1275
Lavender, J. F., A-441a, P-1162
Lavine, T. F., A-385b, P-321
Law, L. W., A-454b, P-1518
Lawler, H. C., A-381f, P-2114
Lawrence, H. S., A-36a, P-532
Lawrence, S. H., A-268f, P-1538
Lawson, W. B., A-18e, P-530
Lawson, W. H., Jr., A-424b, P-2561; A-425e, P-162
Lawton, A. H., A-167f, P-2201; A-449c, P-501
Lawton, R. W., A-208c, P-2558
Lawyer, C. B., A-250c, P-113
Layton, L. L., A-17e, P-2798
Lazarus, S. S., A-192b, P-1674; A-192c, P-1675
Lazere, F., A-36d, P-537; A-326b, P-379
Lazo-Wasem, E. A., A-222b, P-1269
Lazzarini, R. A., A-349e, P-2036
Le, C. R., A-391a, P-793
Leach, F. R., A-4f, P-1420
Leake, C. D., A-325f, P-707
Lease, J. G., A-295f, P-503
Leathem, J. H., A-198c, P-1817
Leduc, E. H., A-445b, P-2761
Lee, C. C., A-434f, P-1594
Lee, C. L., A-12b, P-1068; A-13c, P-1750
Lee, D. H., A-449e, P-496; A-450b, P-2720
Lee, D. H. K., A-212d, P-1884
Lee, H. M., A-34a, P-435
Lee, J. B., A-403d, P-1272; A-415e, P-1275
Lee, J. M., A-263b, P-1780
Lee, K. S., A-123d, P-999; A-123e, P-998
Lee, K. T., A-91d, P-614; A-95d, P-617
Lee, S., A-17e, P-2798
Lee, W., A-45a, P-1398
Lee, Y. P., A-224e, P-858
Leeman, S. E., A-184f, P-233
Lees, H., A-306a, P-308
LeFevre, P. G., A-139b, P-1931
Lehman, I. R., A-358b, P-1391
Lehr, D., A-194d, P-457; A-194e, P-458
Lehr, D. E., A-106f, P-1357
Leibman, K. C., A-235c, P-2106
Leikhim, E. J., A-19a, P-526
LeMessurier, D. H., A-103c, P-2524
Lemons, R., A-153f, P-1698
Lempert, N., A-407e, P-1680
Langemann, F. W., A-354e, P-1128
Leon, M. A., A-19e, P-528; A-19f, P-525
Leonard, A. S., A-249e, P-1653
Leonard, W. J., Jr., A-381c, P-822
Leonards, J. R., A-191f, P-86
Leong, G. F., A-286a, P-1284; A-286b, P-1281
Leong, H. C., A-162d, P-2599
Lepeschkin, E., A-130a, P-214
Lepore, P. D., A-296c, P-506
Lepow, I. H., A-19e, P-528
LeQuire, V. S., A-97d, P-2293
Lerman, S., A-378d, P-790
Lerner, A. B., P-267
Lerner, E. M., A-38b, P-1155
Lerner, L. J., A-200f, P-2475
Lerner, S. R., A-201f, P-2487
LeRouge, N. A., A-226f, P-420
Lervold, A. M., A-77e, P-302
Leskowitz, S., A-24f, P-1747; A-259f, P-2797
Lesse, H., A-322d, P-1208
Levedahl, B. H., A-197b, P-2482
LeVeen, H. H., A-274f, P-2504
Leveille, G. A., A-370d, P-1701
Levenberg, B., A-1c, P-2630
Lever, W. F., A-237b, P-2292
Levey, S., A-7a, P-2782
Levin, D. H., A-363a, P-1995
Levin, J., A-393d, P-101
Levin, M., A-450a, P-852
Levin, S. S., A-117a, P-783
Levine, B. B., A-28f, P-1770; A-258f, P-2378
Levine, H. J., A-127d, P-1298
Levine, L., A-13f, P-2389
Levine, R., A-318e, P-2703
Levine, R. R., A-414e, P-2179
Levine, S., A-437b, P-1164
Levinthal, C., A-255d, P-883
Levintow, L., A-1a, P-1868
Levitch, M., A-350b, P-1568
Levitin, H., A-406a, P-1321
Levitt, M. F., A-403e, P-670
Levy, A. C., A-158f, P-2757
Levy, B., A-315d, P-2219
Levy, C. K., A-402a, P-136
Levy, G., A-243f, P-2733
Levy, H. B., A-441b, P-1163
Levy, M., A-381b, P-932
Levy, M. N., A-131d, P-691
Lewin, J., A-345d, P-1373
Lewin, L. M., A-447d, P-2048
Lewis, B. D., A-4c, P-1423
Lewis, B. M., A-425f, P-702
Lewis, D. H., A-131f, P-2523
Lewis, G. J., A-219a, P-383
Lewis, J. H., A-52f, P-45
Lewis, M. L., A-105c, P-1307
Lewis, M. S., A-380d, P-2066
Lewis, N., A-106d, P-1356; A-412b, P-127
Lhamon, W. T., P-64
Li, C. P., A-439e, P-1142
Li, M., A-290f, P-2416
Li, T. H., A-128b, P-1004; A-312e, P-981
Li, T. K., A-222a, P-2309
Li, W. K., A-132a, P-695; A-420e, P-1809
Lichstein, H. C., A-225a, P-2127
Lichter, W., A-443b, P-1735
Lidd, D., A-14d, P-2813
Lieber, E., A-250c, P-113
Lieberman, R., A-28a, P-1148
Lieberman, S., A-180e, P-344
Lieberson, M., A-275d, P-2507
Liebhaber, H., A-443e, P-1139
Liebman, F., A-98a, P-1890
Liebowitz, M. R., A-101c, P-1300
Liener, I. E., A-220a, P-1441
Light, A. E., A-435d, P-1720
Likoff, W., A-55d, P-2435
Lilienfield, L. S., A-406e, P-1323
Lillehei, R. C., A-116e, P-780; A-399e, P-141; P-661
Lillick, L. C., A-24b, P-2256
Lilly, J. C., A-329d, P-181
Lilly, V. G., A-269b, P-2784
Lim, R. K. S., A-310f, P-406
Lin, E. C. C., A-243d, P-15
Lin, G., A-110c, P-1904
Lin, T. M., A-251a, P-118
Linares, R., A-115d, P-686
Lindberg, D. A. B., A-262a, P-2759
Lindberg, E. F., A-131a, P-2525
Lindberg, M., A-230f, P-289
Linde, L. M., A-106d, P-1356
Lindholm, L., A-32b, P-2751
Lindner, A., A-264b, P-1041; A-294b, P-1683
Lindsay, H. A., A-417f, P-1942
Lindsay, R. H., A-204f, P-1185
Lindsley, B. F., A-400b, P-2195
Lindsley, D. B., A-330c, P-173
Lindsley, D. F., A-337b, P-1973
Lindstrom, H. V., A-243e, P-1591
Ling, G., A-304f, P-721
Link, G. D., A-27e, P-1741
Link, R., A-329e, P-1974
Linkswiler, H. M., A-284b, P-1203
Lionetti, F. J., A-65a, P-2073
Lipkin, M., A-242d, P-646
Lipmann, F., A-86f, P-1406; P-251
Lipner, H. J., A-205c, P-1187
Lippincott, S. C., A-449c, P-501
Lipscomb, H. S., A-185d, P-636
Lipsky, J. A., A-423c, P-2564
Lipsky, S. R., A-281f, P-2153
Lipton, M. M., A-265a, P-1760
Lis, E., A-368c, P-474
Lisan, P., A-91a, P-389
Litchfield, J. B., A-416c, P-124
Little, J. M., A-115b, P-688; A-120b, P-1986; A-414d, P-2190
Litwack, G., A-218e, P-325
Liu, C., A-446b, P-2356
Liu, C.N., A-336b, P-174
Liu, O. C., A-158c, P-2768; A-445d, P-2359
Live, I., A-25d, P-2348
Llinas, R., A-341f, P-1311
LoBue, J., A-71c, P-1923
Locke, W., A-413b, P-732
Lockhart, W. L., A-155d, P-1249
Loeb, E., A-74c, P-820
Loerch, J. D., A-389c, P-2605
Loewenstein, W. R., A-346b, P-1367
Loewy, A. G., A-57a, P-1236
Lofgren, S. L., A-396d, P-110
Lofland, H. B., A-95c, P-576
Loftfield, R. B., A-1f, P-1477
Logan, M. A., A-1e, P-2067
Logan, W. L., A-429a, P-2530
Loggins, P. E., A-219d, P-2311
Logue, J. A., A-266f, P-2459
Loh, P. C., A-16c, P-518
Loken, M. K., A-72c, P-661
Lolley, R. N., A-341d, P-1313
Lombardi, B., A-289f, P-468
London, I. M., A-68e, P-2689
Long, E. L., A-287e, P-1053
Long, J. M., A-185d, P-636
Long, J. P., A-314b, P-2170; P-567
Long, W. K., A-64b, P-860
Longerbeam, J. K., A-116e, P-780; A-399e, P-141
Longmire, W. P., Jr., A-37d, P-2451
Longmore, W. J., A-278b, P-814
Loomis, C., A-292e, P-1122
Loomis, W. D., A-375f, P-490
Loper, J. C., A-254f, P-2602
Lopez, J., A-103e, P-359; A-107b, P-1351
Loran, M. R., A-242c, P-201
Lorand, L., A-54a, P-1230
Lorber, S. H., A-247a, P-1258
Lorenze, E. J., A-378c, P-476
Loring, H. S., A-435f, P-836
Loring, J. M., A-231c, P-1432
Loring, W. E., A-160d, P-2297
Lorkiewicz, Z., A-360e, P-878
Lossow, W. J., A-282c, P-2502
Lotspeich, F. J., A-269b, P-2784
Lotspeich, W. D., A-415b, P-1273
Louckes, H. S., A-246e, P-1260; A-246f, P-1259
Loudas, B. L., A-281d, P-353
Louderback, A. L., A-144c, P-2444
Love, E., A-390b, P-324
Love, W. C., A-166c, P-2705
Loveless, M. H., A-21e, P-2800
Lovenberg, W., A-318e, P-2703
Löw, H., A-48f, P-889
Lowenstein, J. M., A-82c, P-2641
Lowenthal, J., A-51b, P-382; A-53d, P-608
Lowry, O. H., A-390f, P-2642
Lu, F. C., A-432f, P-1024
Lu, G. G., A-102f, P-363
Lubin, M., A-142a, P-1635
Lucas, F. V., A-70f, P-2254
Luckey, T. D., A-365a, P-489
Ludwig, B. J., A-113d, P-396
Ludwig, K., A-159a, P-2756
Luft, U. C., A-429b, P-2575
Luhby, A. L., A-451b, P-499
Luke, W., A-100a, P-1899
Lukin, L., A-206f, P-2513
Lumb, G., A-103b, P-2343
Lumry, R., A-232a, P-936
Lundberg, W. O., A-93e, P-1831
Lundin, R. E., A-234c, P-2107
Luria, S. E., A-256a, P-2607
Luse, S. A., A-119f, P-6
Lushbough, C. H., A-52b, P-482
Luttner, P. M., A-453e, P-1514
Luyet, B. J., A-51f, P-1381
Lycke, E., A-441f, P-1729; A-442a, P-1730
Lyman, C. P., A-211d, P-751
Lyman, R. L., A-8f, P-2779
Lynch, A., A-97c, P-581
Lynen, F., P-2441
Lynes, T. E., A-323e, P-585
Lynn, L. T., A-74b, P-824
Lynn, W. S., Jr. A-204d, P-2100
Lyon, J. B., A-87b, P-299
Lyons, H. A., A-421c, P-2562; A-428a, P-2571
Lywood, D. W., A-324a, P-2171

M

MacCanon, D. M., A-213d, P-675
MacCarty, C. S., A-322e, P-629
MacDonald, H. L., A-87a, P-298
MacDonald, R. A., A-287a, P-462; A-287b, P-463
MacFarlane, J. A., A-53d, P-608
Machowicz, P., A-100d, P-1905
MacIntosh, F. C., P-564
MacIntyre, S. B., A-167f, P-2201
Mackenzie, C. G., A-44c, P-2007; A-135b, P-2687; A-148e, P-91
Mackenzie, J. B., A-135b, P-2687; A-148e, P-91
Mackler, B., A-45e, P-2009
MacLean, L. D., A-101b, P-1290
MacLean, P. D., A-331c, P-2580
MacLeod, R. M., A-199c, P-1813
MacNichol, E. F., Jr., A-338c, P-1369
MacVaugh, H., A-106b, P-1353
Macy, J., Jr., A-333c, P-778
Madden, D. A., A-35b, P-430; A-35c, P-429
Maddock, C. L., A-154c, P-1696
Madison, J. T., A-144e, P-2685
Madoff, M. A., A-62c, P-2135
Maeir, D. M., A-29c, P-2281
Maengwyn-Davies, G. D., A-1b, P-316; A-316b, P-2218; A-317c, P-2220
Maffly, R. H., A-137b, P-731
Maganzini, H. C., A-406e, P-1323
Magarik, S., A-39e, P-2715
Magasanik, B., A-224a, P-1507; P-2696
Magill, T. A., A-122d, P-965
Magnes, J., A-336f, P-774
Magoulas, J., A-381b, P-932
Mahaffey, W. C., A-83e, P-1951
Mahesh, V. B., A-174f, P-1467
Maheshwari, N., A-362c, P-2003
Mahler, H. R., A-220b, P-2015
Maickel, R. P., A-276e, P-2724; A-321f, P-1803
Maiti, A., A-307b, P-1810
Maitra, U., A-3d, P-2633
Majno, G., A-119e, P-441
Makinodan, T., A-25e, P-2349
Makman, M. H., A-189a, P-2102
Malamed, S., A-195c, P-1222
Malavolta, E., A-350d, P-2034
Malay, W., A-14f, P-377
Maley, F., A-360d, P-2006
Maley, G. F., A-360d, P-2006
Malhotra, O.P., A-55a, P-606; A-55b, P-607
Maling, H. M., A-123a, P-964; A-276f, P-2725; A-277a, P-2726; A-322c, P-108
Malis, J. L., A-323f, P-626
Mally, M. J., A-71f, P-1864
Maloney, M. A., A-71b, P-1925
Maluf, N. S. R., A-249f, P-120
Malvin, R. L., A-405e, P-1322
Manax, S. J., A-325a, P-712
Mancia, M., A-341c, P-1361
Mandel, L. R., A-357d, P-839
Mandeles, S., A-389d, P-2119
Mandl, I., A-216d, P-347
Manfredi, F., A-416b, P-129
Manger, W. M., A-424a, P-2559
Mangold, H. K., A-268b, P-2154
Mann, G. V., A-90d, P-616; A-365b, P-615; A-368f, P-1086; A-373b, P-1087
Mannering, G. J., A-65c, P-1033
Manning, J. W., A-326f, P-969
Mans, R. J., A-390e, P-794
Manski, W., A-41a, P-1146
Mansmann, H. C., Jr., A-262d, P-2375
Manson, L. A., A-37b, P-540
Mansour, J. M., A-226f, P-420
Mansour, T. E., A-226f, P-420
Mantel, N., A-28a, P-1148
Manwell, C., A-69c, P-1378
Mapp, F. E., A-201a, P-2483
Marc-Aurele, J., A-406d, P-735
Marcus, A., A-233c, P-2163
Marcus, M., A-368e, P-2727
Maren, T. H., A-227a, P-381
Margolin, S., A-113b, P-397
Mariani, T., A-298f, P-1793
Marinetti, G. V., A-279f, P-943
Marini, M. A., A-355e, P-1479
Mark, V. H., A-345c, P-715
Markesbery, W. R., A-67e, P-1374
Markivee, C. R., A-398a, P-140

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Markiw, R. T., A-379a, P-1421
Markowitz, A. S., A-93c, P-2461
Markowitz, H., A-63a, P-2392
Marks, P. A., A-224c, P-1433
Markus, G., A-59e, P-2430
Marley, J. F., A-451b, P-499
Marrazzi, A. S., A-324d, P-1842; A-333a, P-1372; A-393e, P-631
Marsh, J. M., A-187e, P-1435
Marshall, D. C., A-33d, P-431; A-35d, P-432; A-35e, P-436
Marshall, F. L., A-231f, P-2046
Marshall, G. J., A-69a, P-2210
Marshall, H. W., A-131a, P-2525
Marshall, N. J., A-293c, P-1120
Marshall, R. J., A-130d, P-2522
Marte, E., A-305e, P-1213
Martin, A. R., P-566
Martin, C. J., A-234d, P-920
Martin, G. M., A-74d, P-2258
Martin, H. B., A-427e, P-2569
Martin, H. E., A-13e, P-1677
Martin, H. F., A-199f, P-2156
Martin, R. A., A-69b, P-1062
Martin, R. G., A-225b, P-2128
Martin, W. R., A-310c, P-1590; A-310d, P-1587; A-310e, P-1584
Martinez, C., A-32d, P-539
Martinez, J., A-300f, P-728
Martinez L. de Letona, J., A-99c, P-357
Martonosi, A., A-298b, P-1800
Maruyama, K., A-299e, P-1797
Marx, W., A-162f, P-1404
Mason, M., A-200a, P-1428
Mason, M. M., A-175c, P-1547
Mason, N. R., A-187e, P-1435
Mason, R. G., A-62a, P-1660
Masoro, E. J., A-214b, P-746; A-272e, P-81; A-272f, P-2508
Masterson, P., A-169f, P-991
Materson, B. J., A-349c, P-1288
Matheny, N., A-3c, P-1707
Mather, A. N., A-206c, P-2162
Mathews, C. K., A-453f, P-1520
Mathews, M. B., A-163d, P-1410
Mathues, J. K., A-369e, P-2316
Mathur, G. P., A-5c, P-2125
Matschiner, J. T., A-365f, P-1716
Matsumiya, H., A-232a, P-936
Matsushima, Y., A-78a, P-1492
Matthaei, J. H., A-391f, P-796
Matthysse, W., P-2699
Mattoon, J. R., A-10d, P-1418
Mattox, V. R., A-179d, P-336
Matz, M., A-379b, P-2120
Mauck, H. P., Jr., A-131c, P-2518
Maurer, P. H., A-21c, P-1767
Maver, M. E., A-356d, P-1392
Maxfield, M., A-376e, P-2145
Maxfield, M. E., A-212b, P-1883
Maxwell, H. R., A-277e, P-1119
Maxwell, R. A., A-315c, P-2217
Mayerson, H. S., P-1954
Maylock, J., A-252f, P-1267
Maynert, E. W., A-61d, P-1169
Mazel, P., A-306f, P-2399
Mazumder, R., A-272b, P-270
Mazurowski, J. A., A-332b, P-1362
McAfee, R. D., A-413b, P-732
McAlister, R., A-74d, P-2258
McAlpine, R. J., A-403a, P-2744
McCallum, Z. T., A-126c, P-211
McCaman, M. W., A-301f, P-2542
McCaman, R. E., A-344c, P-106
McCann, F. V., A-124b, P-207
McCann, M. B., A-92b, P-619
McCann, S. M., A-333e, P-227
McCarthy, R. E., A-35a, P-433
McCarty, D. J., A-23d, P-2277
McCarty, K. S., A-151c, P-1239
McCarty, M., A-30b, P-1772
McCaughey, W. F., A-350e, P-2335
McCay, P. B., A-453b, P-2165
McClement, J. H., A-160d, P-2297
McCluskey, R. T., A-17f, P-2276; A-37e, P-2273
McColl, J. D., A-115f, P-394
McCollum, E. B., A-203d, P-500
McConnell, K. P., A-299d, P-74
McCook, R. D., A-213a, P-1333
McCormick, D. B., A-447e, P-2047
McCouch, G. P., A-336b, P-174
McCoy, G., A-132a, P-695; A-420e, P-1809
McCrary, C., A-160f, P-1047
McCready, D. W., Jr., A-347b, P-1911
McCullough, C. B., A-338f, P-175
McCutcheon, R. S., A-315e, P-2708
McDevitt, H. O., A-17a, P-2391; A-259a, P-2377
McDevitt, N. B., A-62a, P-1660
McDonald, H. J., A-267c, P-827
McDonald, J. H., A-290b, P-1079
McDonald, P., A-108d, P-763
McDonald, T. P., A-51e, P-1927; A-157f, P-2750
McDougal, D. B., Jr., A-338d, P-242
McGavack, T. H., A-161e, P-2123
McGiff, J. C., A-109f, P-2178
McGinley, J. P., A-34b, P-1071
McGlasson, W. B., A-374f, P-2079
McGough, E. C., A-171f, P-2224
McGregor, L. L., A-230d, P-798
McGregor, M., A-131b, P-2528; A-133a, P-758
McGuckin, W. F., A-184e, P-634
McGuinness, E. T., A-43c, P-1486
McIlroy, C. A., A-141f, P-1641
McIlroy, M. B., A-423b, P-697
McIlwain, J. T., A-348b, P-1977
McIntosh, J., A-118f, P-440
McKee, R. W., A-156d, P-349
McKeever, W. P., A-102a, P-1296
McKenna, J. M., A-150e, P-98
McKenna, R. D., A-253b, P-2740
McKennis, H., Jr., A-5d, P-282; A-172d, P-992
McKenzie, B. F., A-184e, P-634
McKersie, D. E., A-435c, P-1600
McKey, B. V., A-291f, P-1127; A-292a, P-1121; A-292e, P-1122
McKibbin, J. M., A-269d, P-2149
McKissick, G. E., A-91f, P-1649
McKnight, R. C., A-46b, P-306
McLain, G. S., A-274a, P-274
McLain, P. L., A-122c, P-967
McLamore, W. M., A-411a, P-1632; A-411d, P-1633
McLaughlan, J. M., A-9a, P-2772; A-9b, P-2771
McLean, D. M., A-443d, P-1136
McLendon, W. W., A-57f, P-47
McManus, I. R., A-191e, P-858a
McManus, J. M., A-411a, P-1632; A-411d, P-1633
McManus, T. J., A-65d, P-1065
McMaster, P. D., A-26e, P-1744
McMaster, P. R. B., A-38b, P-1155
McMurray, W. C., A-280e, P-815
McNally, J. B., A-350e, P-2335
McNamara, P., A-362d, P-1997
McNary, J., A-350c, P-2035
McNee, R. C., A-208a, P-2515
McNeill, G., A-223f, P-2604
McNicol, G. P., A-58b, P-1859
McNicol, S. M., A-287d, P-1714
McPherson, S. E., A-40a, P-2268
McRorie, N., A-394c, P-2467
McVaugh, M., A-412d, P-132
McVickar, D. L., A-19c, P-524
Meacham, T. N., A-219d, P-2311
Mead, C. G., A-353e, P-2083
Mead, J., A-427d, P-2529; A-429e, P-2535
Mead, J. A. R., A-168d, P-324; A-168e, P-422
Mead, J. F., A-274b, P-2021; P-2442
Mechner, F., A-397f, P-55
Medart, William S., A-60e, P-1658
Meeker, W. R., A-261d, P-2755
Meeker, W. R., Jr., A-34e, P-428
Megirian, R., A-433f, P-2225
Mehler, A. H., A-232d, P-921
Mehta, D. J., A-410f, P-2187
Meier, H., A-54f, P-605
Meisner, J. E., A-120e, P-1896
Meister, A., A-229b, P-2628
Meites, J., A-183e, P-643; A-184d, P-480; A-186b, P-1225; A-418c, P-1952
Mejia, R., A-129b, P-1985
Melcer, I., A-222b, P-1269
Melchior, J. B., A-184a, P-639
Mele, R., A-60f, P-1863
Mellett, L. B., A-157a, P-371; A-310b, P-1588
Mellman, W. J., A-447b, P-2781
Melnick, P. J., A-268f, P-1538
Meltzer, H. Y., A-227b, P-109
Melville, K. L., A-89f, P-973
Mendelson, E. S., A-347a, P-710
Mendelson, J. H., A-341f, P-1311
Mendenhall, R. M., A-420d, P-2222
Mendez, J., A-371f, P-1083
Meneely, G. R., A-295b, P-1626
Menge, H., A-367e, P-1202
Mengel, D. E., A-136a, P-375
Menguy, R., A-249d, P-123
Menkin, V., A-369d, P-437
Mennis, W. I., A-26b, P-2380
Menschik, Z., A-48a, P-2591
Meranze, D. R., A-66b, P-1073
Meriwether, B. P., A-240f, P-924
Merkow, L. P., A-118d, P-1043
Merrick, J. M., A-272a, P-802
Merrill, E. W., A-99a, P-1889
Merrill, J. M., A-90d, P-616; A-97d, P-2293; A-365b, P-615; A-368f, P-1086; A-373b, P-1087
Merrill, J. P., A-33d, P-431; A-415e, P-1275
Merrill, S. H., A-388a, P-1472
Merritt, J. H., A-340d, P-1834
Mertz, W., A-364f, P-2308
Meschia, G., A-422e, P-704
Messeloff, C. R., A-410f, P-2187
Messer, D., A-59f, P-1855
Messer, J. V., A-127d, P-1298
Messore, G., A-437b, P-1164; A-443c, P-2766
Metcalf, R. G., A-155f, P-16
Metzgar, R. S., A-39c, P-1157
Metzger, B., A-190d, P-35
Metzger, H., A-30e, P-2393
Metzger, J. F., A-426d, P-521
Meyer, D. K., A-86a, P-1992
Meyer, H. G., A-20a, P-2810
Meyer, H. M., Jr., A-446e, P-517; A-446f, P-522
Meyer, M. W., A-107a, P-1350
Meyers, F. H., A-121f, P-963
Meyeserian, M., A-39b, P-1160
Michael, A. F., Jr., A-408c, P-2262
Michael, W. R., A-451f, P-2056
Michaels, G. D., A-270b, P-472
Michaelson, S. M., A-399b, P-2746
Michel, T. C., A-432b, P-1019
Michl, H., A-60b, P-2427
Middlebrook, W. R., A-39b, P-75
Middleton, E. J., A-9a, P-2772
Middleton, P. J., A-201d, P-2489
Miescher, P., A-14b, P-2369; A-40d, P-1156
Mih, N., A-13c, P-1750
Mihalyi, E., A-385f, P-1235
Mihich, E., A-262c, P-2372; A-407a, P-2227
Mikata, A., A-288c, P-469
Mikiten, T. M., A-327b, P-2402
Miknius, S., A-90a, P-400
Milauskas, A. T., A-164e, P-1283
Miles, J. L., A-231e, P-2109
Milgrom, F., A-40f, P-1158
Milholland, R. J., A-225d, P-326
Milhorat, A. T., A-295c, P-1029
Milic-Emili, J., A-427d, P-2529
Millar, G. J., A-55f, P-604
Miller, A., A-135c, P-907
Miller, B. F., A-33c, P-434
Miller, C., A-26b, P-2380
Miller, D., A-290b, P-1079
Miller, D. A., A-428b, P-2576
Miller, E. C., A-367e, P-1202
Miller, F., A-37e, P-2273
Miller, F. S., A-214f, P-676
Miller, G., A-404e, P-2286
Miller, H. I., A-276a, P-950
Miller, I. H., Jr., A-388f, P-1513
Miller, J. A., Jr., A-214f, P-676
Miller, K. D., A-53f, P-603
Miller, L. A., A-216b, P-660
Miller, L. L., A-191b, P2101
Miller, O. N., A-277c, P-1822; A-367d P-2457; A-370f, P-2777; A-450f, P-493
Miller, O. P., A-57b, P-49
Miller, R. F., A-296b, P-507; A-296c, P-506
Miller, T. B., A-411b, P-2136
Milliser, R. V., A-77d, P-504
Mills, G. C., A-64d, P-2691
Minakami, S., A-46f, P-2010
Minard, F. N., A-342f, P-2693
Mings, H., A-249d, P-123
Minnaert, K., A-42b, P-1485
Mirsky, J. H., A-323d, P-586
Mishkin, M., A-327e, P-2583
Misrahy, G. A., A-76a, P-2423; A-324f, P-1308
Mistry, S. P., A-6e, P-2780; A-447f, P-331
Mitchell, F. W., A-159a, P-2756
Mitchell, J. H., A-103f, P-218; A-126d, P-148; A-129c, P-145; A-132b, P-690
Miya, T. S., A-167b, P-2472
Miyada, D. S., A-404d, P-1684
Miyamoto, S., A-298c, P-1638; A-346d, P-344
Mize, C. E., A-231d, P-861
Mizuno, S., A-348d, P-775
Mobberley, M. L., A-285c, P-2674
Mody, J. K., A-176a, P-1647
Mody, U., A-360c, P-918
Moede, A., A-367c, P-2454
Moeller, H. C., A-434d, P-1023
Moewus, L., A-149e, P-89
Molina, G., A-407b, P-2183
Moline, S. W., A-52b, P-482
Möller, W., A-357b, P-837
Molnar, J. I., A-99f, P-225
Molomut, N., A-15e, P-1143; A-39e, P-2715
Moloney, J. B., P-561
Mombelloni, P., A-160e, P-1038
Mommaerts, W. F. H. M., A-232f, P-76; A-302a, P-73
Monagle, J. E., A-96b, P-620
Monder, C., A-175d, P-807
Monna, T., A-140a, P-189
Monod, J., A-222f, P-2606
Monroe, C. W., A-35c, P-429
Monroe, J. F., A-406f, P-1326
Monson, R. R., A-134d, P-725
Monteith, W. E., A-243a, P-645
Montemurro, D. G., A-188a, P-1219
Monti, G. L., A-194c, P-2491
Montoye, H. J., A-207d, P-1204
Moog, F., P-1194
Moon, H. D., A-256d, P-1201
Moon, R. C., A-196c, P-1953
Moore, E., A-232 A, P-936
Moore, J. L, A-122a, P-968
Moore, J. W., A-338b, P-239
Moore, N. M., A-424f, P-160
Moore, S., A-377b, P-320; A-377c, P-319
Moorhead, P. S., A-150b, P-90
Mora, P. T., A-438b, P-832
Moreno, F., A-421c, P-2562
Moreno, O. M., A-252a, P-2735
Moretti, A., A-162e, P-1405
Morey, E., A-182e, P-2707
Morgan, A. M., A-310a, P-1015
Morgan, C., A-15a, P-519; A-440e, P-1166
Morgan, H. E., A-83d, P-2097; A-85f, P-2600
Morgan, W. S., A-200e, P-464
Morgane, P. J., A-334a, P-238
Morin, F. A., A-331e, P-716; A-340a, P-1976
Morowitz, H. J., P-2699
Morris, B. T., A-34d, P-424
Morris, H. P., A-435b, P-644
Morris, J. A., A-436c, P-2358
Morris, M. D., A-4c, P-1423
Morris, N. R., A-358d, P-848
Morris, W. W., A-373e, P-1092
Morrison, A. B., A-9a, P-2772; A-9b, P-2771
Morrison, Ashton B., A-409b, P-1687
Morrison, E., A-93f, P-1665
Morrison, M., A-42e, P-1484
Mortenson, L. E., A-234e, P-2037
Moruzzi, G., A-336f, P-774
Moschette, D. S., A-207e, P-483
Moshier, T. A., A-10d, P-1418
Mosley, W. H., A-355c, P-958
Moss, W. G., A-349c, P-1288
Mosser, D. G., A-72c, P-661
Moulder, P. V., A-127e, P-155
Moulton, R. H., A-138a, P-1933
Mounter, A., A-242f, P-1671
Mouratoff, G. J., A-169d, P-1016; A-191c, P-32
Moury, N. F., Jr., A-81d, P-294
Mower, H. F., A-349f, P-2038
Mowles, T. F., A-181b, P-2404
Mozell, M. M., A-339a, P-1364
Mraz, F. R., A-382c, P-1131
Mrozek, S. L., A-356c, P-1383
Mudd, S., A-18c, P-553
Mueller, G. C. E., A-427b, P-2533
Mueller, J. F., A-277d, P-1823
Mueller, P. S., A-262f, P-2278
Muirhead, E. E., A-112d, P-1341
Mújica, A., A-49d, P-893
Muldrey, J. E., A-277c, P-1822
Mule, S. J., A-310b, P-1588
Mulford, D. J., A-278b, P-814
Mulhern, A. L., A-407a, P-2227
Mulieri, L. A., A-420c, P-1969
Mulinos, M. G., A-113f, P-395
Mullins, L. J., A-142b, P-1934
Mulrow, P. J., A-177d, P-1846
Mumbach, M. W., A-177b, P-184
Munck, A., A-176e, P-2408
Munoz, C., A-319f, P-1806
Munson, A. E., A-187c, P-2209
Munson, P. L., A-194c, P-2491
Muntz, M. C., A-205c, P-1187
Murakami, W. T., A-438f, P-835

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Murayama, M., A-384e, P-2617
Murnane, T. G., A-446d, P-1138
Murphree, H. B., A-397e, P-2400
Murphy, J., A-410a, P-1624
Murphy, J. J., A-405b, P-2289
Murphy, J. V., A-146a, P-662
Murphy, Q. R., A-125c, P-1294
Murray, M., A-56d, P-1231
Murray, T. K., A-453b, P-2787
Musacchia, X. J., A-244d, P-193
Muschel, L. H., A-15c, P-531
Mustell, F. P., A-121b, P-1902
Muth, O. H., P-2323
Myers, L. T., A-218f, P-870
Myers, R. E., A-336e, P-1913
Myers, T. C., A-41b, P-1559

N

Naaman, Y., A-422f, P-689
Naber, E. C., A-293b, P-1125
Nadel, J. A., A-429c, P-1304
Naganawa, H. T., A-166d, P-2263
Nagler, A. L., A-116f, P-782; A-117e, P-784
Nagy, B., A-298e, P-1799
Nahas, G. G., A-75e, P-1611; A-330e, P-708; A-417a, P-2181; A-424a, P-2559
Naik, R., A-264b, P-1041
Naimark, A., A-107d, P-1352
Najjar, V. A., A-233a, P-2113
Naka, K., A-337d, P-1370
Nakamichi, M., A-378b, P-2257
Nakamoto, T., A-229e, P-286
Nakayama, T., A-334e, P-1331
Nalbandov, A. V., A-186d, P-236
Naninga, L., A-232f, P-76
Napoli, M. D., A-323d, P-586
Napolitano, L. M., A-146d, P-884
Nash, C. W., A-104d, P-1575
Nason, A., A-46d, P-1402
Nasset, E. S., A-245d, P-11
Natuk, W. L., A-303e, P-250
Nath, R., A-227e, P-1519
Nathan, P., A-33c, P-434
Natori, Y., A-378e, P-329
Naughton, M. A., A-386e, P-2619; A-422e, P-704
Nauss, A. H., A-251b, P-1452
Navarrete, D., A-292e, P-1122
Navazio, F., A-323a, P-31
Necheles, T. F., A-67b, P-1375
Nedeljkovic, R. I., A-177e, P-2405
Neel, K. E., A-388d, P-2121
Neiders, M., A-24a, P-2274
Neidle, A., A-234b, P-2629
Neill, K. C., A-2f, P-2778
Neill, W. A., A-127d, P-1298
Nelkin, W., A-185d, P-636
Nelson, A. A., A-287e, P-1053
Nelson, D., A-189c, P-2723
Nelson, D. R., A-229f, P-2108
Nelson, E. L., A-23f, P-2743
Nelson, J. W., A-170b, P-1801
Nelson, N., A-41f, P-1563; A-42f, P-1481
Nelson, R. A., A-244b, P-17; A-247b, P-1261
Nelson, T. E., Jr., A-303d, P-249
Nelson, W. L., A-49f, P-894
Nelson, W. O., A-418d, P-1943
Nemer, M., A-360a, P-912
Neuhauser, G., A-215d, P-2557
Neuir, P., P-1256, P-1257
Neuith, P. J., A-202a, P-1183
Nguemuceno, C., A-414d, P-2190
Nguene, E. M., Jr., A-271e, P-946; A-279e, P-945
Nahelm, M. C., A-367a, P-1110; A-368e, P-1118; P-2321
Nher, E., A-262c, P-2372
Ni, E. C., A-260c, P-2792
Nibert, D., A-146e, P-305
Nichold, E. F., A-79a, P-899
Nichold, H. A., A-44a, P-1394
Nichaus, F. C., A-390d, P-789
Nichaus, Otto W., A-184e, P-1283
Niemann, N. P., A-377b, P-320
Niemann, N. R., A-167b, P-2472
Nienath, H., A-220e, P-1447; A-385c, P-1444
Nieille, M. C., A-251b, P-1452
Nieille, P. F., A-365a, P-489
Nieberne, P. M., A-90c, P-573; A-290d, P-1713
Nieburgh, R. W., A-281b, P-817
Nieman, E. B., A-224a, P-1507
Nieman, H. A. L., A-92d, P-579
Nieman, W., A-443c, P-2766
Newsham, L. S., A-420f, P-2572
Newsom, W. T., A-365c, P-1090
Newsome, F. E., A-67f, P-1380
Newsome, J. R., A-399f, P-142
Nezamis, J. E., A-182a, P-1654
Ngai, S. H., A-330e, P-708
Nichol, C. A., A-181d, P-1853
Nicholas, J. A., A-292c, P-2418
Nicholls, D., A-279b, P-1450
Nicholls, P., A-50b, P-1551
Nichols, G., Jr., A-76b, P-2424; A-76f, P-2421
Nicholson, T. F., A-416d, P-1277
Nickerson, J. L., A-215d, P-2557
Nickerson, M., A-165e, P-384
Nicolaides, N., A-268a, P-810
Nicoll, C. S., A-418c, P-1952
Nicoloff, D. M., A-248c, P-650; A-249e, P-1653; A-249f, P-120
Niden, A. H., A-105a, P-1354
Niebyl, P. H., A-327b, P-2402
Niedermeier, W., A-81b, P-296
Nielson, R. R., A-216a, P-2594
Nigam, V. N., A-87a, P-298
Nihei, T., A-230b, P-2111
Nirenberg, M. W., A-391f, P-796
Nishida, T., A-284d, P-580
Nishimura, E. T., A-227c, P-1051
Nishimura, M., A-374c, P-2666
Nisonoff, A., A-22a, P-1764
Nitowsky, H. M., A-152e, P-1250
Nix, A. R., A-425c, P-698
Niyogi, S. K., A-380c, P-2060
Njoku-Obi, A., A-266c, P-1755
Noback, C. R., A-325d, P-771
Noble, W. M., A-48d, P-2490
Nocenti, M., A-198f, P-1819
Nocho, R. E., A-447b, P-2781
Noda, K., A-346d, P-246
Noda, L., A-230b, P-2111
Noel, F., A-9b, P-2771
Nokes, G. W., A-243c, P-192
Nolan, C., A-383c, P-2140
Noll, H., A-260e, P-2657
Noltmann, E. A., A-218a, P-288
Noonan, T. R., A-398d, P-134
Nordin, J. H., A-256c, P-1542
Norkin, S. A., A-290c, P-1050
Norlind, L. M., A-63d, P-1067
Norman, P. S., A-21d, P-552
Norman, T. D., A-128f, P-2241
Normann, S. J., A-95e, P-1663
Norris, G. E., A-64c, P-2030
North, W. C., A-312f, P-979
Northington, M., A-99d, P-1280
Norton, S., A-308a, P-583; A-320a, P-584
Notchev, V. D., A-200b, P-341
Nothman, M. M., A-90f, P-418
Novack, P., A-100c, P-1908
Noval, J. J., A-173f, P-989
Novelli, G. D., A-391a, P-793
Novick, W. J., A-237e, P-2160
Nowotny, A. H., A-270a, P-2753
Noyes, W. D., A-67d, P-1377
Nugara, D., A-294c, P-509; A-294d, P-2415
Nyc, J. F., A-279a, P-818
Nye, R. E., Jr., A-419f, P-2573

O

Oaks, W., A-91a, P-389
O'Bourke, F. A., A-448b, P-419
O'Brien, D., A-150d, P-1241
O'Brien, J., A-268a, P-810
O'Brien, R. C., A-211d, P-751
O'Brien, T. F., A-27b, P-1745
Ochoa, S., A-362e, P-2000; P-262
Ochs, S., A-332c, P-776
Ochsenfeld, M., A-304f, P-721
Oda, T., A-43e, P-2008
Odang, O.. A-451b, P-499
O'Dell, R. M., A-404a, P-769
O'Dell, T. B., A-323d, P-586
Odell, T. T., Jr., A-51e, P-1927
Oesper, P., A-240e, P-2110
Oester, Y. T., A-168b, P-2706; A-304c, P-405
Oette, K., A-279c, P-2146
Oettgen, H. F., A-158b, P-368
Ogburn, C. A., A-27c, P-2341
Ogle, J. D., A-1e, P-2067
Ohringer, L., A-94b, P-450
Oka, M., A-133f, P-1652
Okazaki, R., A-85b, P-906
Okazaki, T., A-85b, P-906
O'Keefe, E., A-308e, P-1010
O'Kell, R. T., A-246e, P-1260; A-246f, P-1259
Okey, R., A-368c, P-474; A-368d, P-473
Okino, H., A-109d, P-767
Okuda, K., A-203d, P-500
Okuyama, T., A-237f, P-2159
Old, L. J., A-265b, P-1731
Oldfield, J. E., P-2323
Olds, J., A-336a, P-2586
Oleksyshyn, N. L., A-201d, P-2489
Olewine, D. A., A-364b, P-485
Olivier, L. J., A-264d, P-1752
Olness, K., A-408a, P-1686
Olson. E., A-41e, P-2075
Olson, J. M., A-51c, P-2644
Olson, R. E., A-38d, P-1779
Olson, Robert E., A-191e, P-858a; A-228d, P-2055; A-229a, P-2304
O'Malley, B. B., A-14e, P-376; A-14f, P-377; A-155a, P-2207
O'Malley, J. P., A-446f, P-522
Ona, R. G., A-380e, P-1535
Oncley, J. L., A-62d, P-2134
O'Neal, R. M., A-90b, P-2242; A-94a, P-2245
Ono, K., A-270d, P-1828
Ono, T., A-224d, P-862
Ontko, J. A., A-226d, P-948
Ooyama, H., A-345f, P-245
Opalka, E., A-93f, P-1665
Opara-Kubinska, Z., A-360e, P-878
Opie, L. H., A-302c, P-2544
Oppenheimer, H., A-299f, P-2540
Opsahl, P. M., A-200d, P-1816
Orahood, R. C., A-100a, P-1899
Orbison, J. L., A-160f, P-1047
O'Rear, H. B., A-4b, P-1508
Orenski, S. W., A-265b, P-1731
Orentas, D. G., A-86e, P-2656
Orkand, R. K., P-566
Oró, J., A-352c, P-952
Oroszlan, S. I., A-1b, P-316
Orrego, F., A-5d, P-282
Orsi, E. V., A-437b, P-1164
Orten, A. U., A-2d, P-1091
Orten, J. M., A-65e, P-497; A-68d, P-1601
Orth, O. S., A-313b, P-982
Ortiz, P. J., A-439b, P-2608
Orto, L. A., A-378c, P-476
Osadca, M., A-434b, P-1597
Osawa, E., A-15d, P-547
Osebold, J. W., A-266c, P-1755
Oser, B. L., A-241d, P-1949; A-241e, P-1599
Oski, F. A., A-65f, P-1089
Oskoui, M., A-312a, P-975; A-318c, P-2729
Osler, A. G., A-260c, P-2792
Osserman, E. F., A-74e, P-1151
Osterberg, A. C., A-397b, P-623
Osterberg, K. A., A-345a, P-2300
Ostfeld, A. M., P-63
Ostwald, R., A-368c, P-474; A-368d, P-473
Otey, M. C., A-7d, P-1704
Otsuki, S., A-341a, P-2299
Ottolenghi, A., A-54d, P-1667
Ovary, Z., A-28d, P-1765; A-259f, P-2797
Overman, R. R., A-67f, P-1380; A-399f, P-142
Owen, C. A., Jr., A-56c, P-46
Owens, A. H., Jr., A-157b, P-374
Owens, G., A-99d, P-1280
Oxender, D. L., A-140e, P-1456
Oyama, J., A-79c, P-83
Oyasu, R., A-290b, P-1079

P

Pace, N., A-132f, P-2521
Pacholi, T. J., A-137d, P-194
Packer, L., A-49b, P-304
Padnos, M., A-15e, P-1143
Page, A. R., A-18b, P-2801; A-160a, P-2381
Page, E., A-137e, P-1935
Pairent, F. W., A-239f, P-1439
Pakdaman, P., A-407e, P-1680
Pakoskey, A. M., A-199a, P-1429
Palacas, C., A-187f, P-1691
Palade, G. E., A-119e, P-441
Palczuk, N. C., A-22d, P-554
Pallavicini, C., A-87d, P-1412
Pamiljans, V., A-229b, P-2628
Pan, C., A-14b, P-2369
Pan, S. C., A-143d, P-1460
P'an, S. Y., A-323c, P-591; A-411d, P-1633
Panczyszyn, O., A-12b, P-1068
Panos, T. C., A-366f, P-470
Paoletti, R., A-268a, P-810; A-276e, P-2734
Paolucci, A. M., A-452d, P-2791
Papadopoulos, C. N., A-308f, P-1585
Papavasiliou, P. S., A-295e, P-2295
Papermaster, B. W., A-28c, P-1144; A-36e, P-538; A-408a, P-1686
Papp, O., A-131b, P-2528
Pappas, A., A-68d, P-1601
Pardee, A. B., A-224f, P-847
Pardo, E. G., A-318f, P-2172
Parfentjev, I. A., A-264e, P-1754
Parikh, G., A-437c, P-1140
Park, C. R., A-190a, P-37
Park, J. H., A-240f, P-924
Park, J. T., A-78a, P-1492
Parker, W. C., A-255c, P-826
Parkins, W. M., A-117a, P-783
Parks, R. E., Jr., A-65c, P-1033
Parlow, A. F., A-185e, P-237; A-187d, P-642
Parmar, S. S., A-51b, P-382; A-165e, P-384
Parmer, L. P., A-370c, P-1700
Paronetto, F., A-288f, P-461; A-289d, P-1049
Pasamanick, B., A-325f, P-707
Pascuzzi, C. A., A-56c, P-46
Pasik, P., A-328a, P-1916
Pasik, T., A-328a, P-1916
Passano, L. M., A-338f, P-175
Passonneau, J. V., A-390f, P-2642
Patanelli, D. J., A-418d, P-1943
Patel, Y. M., A-161c, P-1528
Pathak, M. A., A-168f, P-2157
Patkin, J. K., A-214b, P-746
Patras, B., A-74f, P-825
Patrick, R., A-167c, P-23
Patt, H. M., A-71b, P-1925; A-286c, P-1285
Patterson, R., A-379e, P-1749
Patton, D. E., A-248b, P-1058
Patton, M. B., A-293c, P-1120
Pavlovec, A., A-144d, P-1469
Payne, H. G., A-434c, P-1592
Payne, R. W., A-175f, P-637
Pazur, J. H., A-216e, P-904
Peabody, R. A., A-351c, P-909
Pearl, J., A-98a, P-1890
Pearlman, C., A-340b, P-625
Pearlman, M. R. J., A-197c, P-345
Pearlman, W. H., A-197c, P-345
Pearson, B., A-287f, P-4
Pearson, C. M., A-303b, P-69
Pearson, H. E., A-442e, P-1737
Pearson, J. P., Jr., A-406f, P-132.
Pearson, W. N., A-7e, P-1095
Pechet, G., A-287a, P-462; A-287b, P-463
Pechet, L., A-57c, P-43
Pechet, M. M., A-177f, P-343
Peck, H. D., Jr., A-219e, P-1557
Peets, E., A-399d, P-1028
Peifer, J. J., A-93e, P-1831
Peiss, C. N., A-110f, P-177; A-132e, P-694; A-213a, P-1333
Pelikan, E. W., A-396c, P-61; A-414e, P-2179
Peller, L., A-231b, P-908
Peng, C. T., A-189b, P-87
Penhos, J. C., A-193c, P-2098
Penn, N. W., A-388c, P-323
Penney, D. E., A-413b, P-732
Peoples, S. A., A-174b, P-1030
Peraino, C., A-245f, P-1702
Peralta, P. H., A-436f, P-1137; A-446d, P-1138
Perchemlides, P., A-162b, P-1409
Pereda, S. A., A-113a, P-1001; A-317a, P-393
Perel, J. M., A-173a, P-1609; A-173e, P-1034
Perez-Cruet, J., A-89b, P-1989
Perkins, E. H., A-25c, P-2347
Perl, E. R., A-349a, P-172
Perlman, D., A-148 d, P-1460
Perlow, M., A-314a, P-1903
Permutt, S., A-105e, P-756
Perry, J., A-360c, P-918
Perry, J. E., A-308c, P-1839
Person, D., A-137d, P-194
Pesut, L., A-365c, P-1090
Peter, E. T., A-249e, P-1653
Peter, J. B., A-49c, P-888
Petermann, M. L., A-144d, P-1469
Peters, G., A-257c, P-2240
Peters, J., A-403a, P-2744
Peters, J. E., A-348c, P-632
Peters, J. H., A-17a, P-2391

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Peters, T., Jr., A-391b, P-2122
Petersen, J. C., A-394b, P-104
Peterson, D. W., A-303c, P-2310
Peterson, E. A., A-390a, P-1470
Peterson, L. H., A-117f, P-1338; P-2494
Peterson, R. D., A-301e, P-2546; A-302f, P-71
Peterson, R. D. A., A-259d, P-439
Peterson, W. D., A-150f, P-95
Petrucelli, L. M., A-312a, P-975; A-318c, P-2729
Pett, L. B., A-96b, P-620
Pfaffmann, C., A-338d, P-171
Pfander, W. H., A-372c, P-479; A-372d, P-486; A-372e, P-487
Pfeiffer, C. C., A-397e, P-2400
Philipson, L., A-155e, P-1869
Phillips, N. E., A-430a, P-2570
Phillips, R. A., A-139f, P-188; A-140a, P-189
Phipps, E., A-344f, P-2466
Phornphiboul, B., A-7e, P-1095
Piala, J. J., A-311e, P-1013
Pick, R., A-93b, P-2483; A-107b, P-1351
Pienta, R. J., A-439f, P-2767
Pieper, H. P., A-98e, P-1895
Pierce, J. C., A-26d, P-1740; A-34e, P-428
Pierce, J. G., A-188f, P-315
Piez, K. A., A-151d, P-1242; A-380d, P-2066; A-384f, P-2063
Pigeon, G., A-406a, P-1321
Pigman, W., A-87c, P-1495
Pike, R. L., A-294e, P-508
Pilkington, L. A., A-414a, P-668
Pinardi, G., A-124d, P-1299
Pincus, W. B., A-263c, P-1761
Pineda, E. P., A-152d, P-652
Pinter, E., A-253b, P-2740
Pinter, G. G., A-275a, P-2503
Pinter, K. G., A-367d, P-2457
Pirani, C. L., A-160e, P-1038
Pirré, A., A-276c, P-2721
Pisano, J., A-344b, P-30
Pisciotta, A. V., A-71f, P-1864
Pitcock, J. A., A-404f, P-2285
Pittot, H. C., A-224b, P-2132
Pittman, M. A., A-61f, A-51
Pitts, R. F., A-415c, P-131
Plaa, G. L., A-171f, P-2224; A-433a, P-1026
Plait, D., A-78b, P-1491
Platt, F. W., A-363d, P-1478
Plaut, G. W. E., A-358c, P-959
Plescia, O. J., A-22d, P-554
Plotkin, H. R., A-66b, P-1073
Plotner, K., A-248b, P-1058
Plough, I. C., A-373a, P-1085
Plummer, A. J., A-109e, P-399; A-308e, P-1010; A-393a, P-1170; A-394e, P-111; A-409f, P-1631
Plzak, V. J., A-400d, P-2192
Pocchiari, F., A-343c, P-2626
Podleski, T. R., A-347f, P-244
Podolsky, R. J., A-301b, P-1794
Pogell, B. M., A-85c, P-898
Pogo, A. O., A-359b, P-915
Pogue, W. G., A-115c, P-153
Polanyi, M. L., A-421e, P-2520
Poliner, I. J., A-155f, P-16
Pollak, O. J., A-149a, P-577; A-149b, P-452; A-152a, P-578
Pollard, H. M., A-41e, P-2075; A-242b, P-14
Pollard, L. W., A-17a, P-2391
Pollard, M., A-444e, P-2763
Politkoff, R., A-445d, P-2359
Pollycove, M., A-98f, P-1897
Polosa, C., A-109a, P-770
Pomerantz, S. H., A-47f, P-1550
Pompeiano, O., A-336f, P-774
Pool, J. G., A-52e, P-610
Popenoe, E. A., A-386c, P-2137
Popper, H., A-288f, P-461; A-289d, P-1049
Porter, C., A-265b, P-1731
Porter, C. C., A-113e, P-1573; A-172f, P-993
Porter, E., A-272f, P-2508
Porter, J. W., A-350a, P-2673
Porter, R. R., A-131c, P-2518
Portwood, R., A-416b, P-129
Posner, H. S., A-315b, P-1837
Post, O., A-377d, P-1565
Post, R. L., A-138b, P-1932
Potter, G. D., A-310f, P-406
Potter, V. R., A-224d, P-862
Potts, A. M., A-225c, P-2624
Potts, G. O., A-198a, P-477; A-418e, P-1944
Poulik, E., A-38a, P-1783
Poulik, M. D., A-387d, P-1763
Powell, R. C., A-106d, P-1356
Power, G., A-424b, P-2561
Powers, M. F., A-307e, P-2169
Powers, S. R., Jr., A-407e, P-1680
Poyer, L., A-355c, P-958
Prabhu, V. G., A-304c, P-405; A-395e, P-24
Prager, M. D., A-74c, P-820
Pratt, E. A., A-358b, P-1391
Pratt, H. K., A-374f, P-2079
Preiss, J., A-86d, P-900
Premachandra, B. N., A-194f, P-2493
Prescott, B., A-439e, P-1142
Pressman, B. C., A-51a, P-885
Pressman, D., A-18a, P-2814; A-108b, P-1766
Preston, A. S., A-406c, P-1320
Preston, R. L., A-372c, P-479; A-372d, P-486
Price, C. C., A-354d, P-2085
Price, D. L., A-90d, P-616; A-373b, P-1087
Prichard, R. W., A-96a, P-575
Priest, R. E., A-95e, P-1663
Priester, L. L, A-60d, P-1232
Princiotto, J. V., A-68c, P-1376
Probst, G. W., A-441d, P-1867
Prockop, L. D., A-144a, P-1642
Proctor, C. D., A-395e, P-24
Proctor, D. F., A-107c, P-1959
Proger, S., A-90f, P-418
Prokop, L. D., A-110a, P-1880
Provence, C. L., A-214c, P-681
Pruss, T. P., A-316b, P-2218
Pruzansky, J. J., A-260b, P-2796
Pscheidt, G. R., A-305c, P-1215; P-66
Psychoyos, S., A-193b, P-38
Puccini, A, A-7d, P-1704
Puck, T. T., A-150c, P-94; A-150d, P-1241
Pujari, H. K., A-274c, P-275
Pumphrey, A. M., A-45c, P-1483
Purple, J. A., A-158b, P-368
Purpura, D. P., A-325d, P-771; A-333b, P-772; A-342e, P-2627
Purvis, J. L., A-46e, P-2050
Putnam, F. W., A-74b, P-824
Putney, F., A-172c, P-1833
Pyle, H. M., A-191a, P-82

Q

Quackenbush, F. W., A-96f, P-1829
Quastel, M. R., A-64a, P-1060
Quastler, H., A-71c, P-1923; A-242d, P-646; P-2699
Quick, A. J., A-56f, P-42
Quigley, J. P., A-246e, P-1260; A-246f, P-1259
Quinlan, W. J., Jr., A-399b, P-2746

R

Rabinovitz, M., A-388b, P-2118
Rabinowitz, J. C., P-258
Rabinowitz, J. L., A-273b, P-951
Rabinowitz, L., A-406b, P-1319
Race, R. R., A-66f, P-2363
Rachele, J. R., A-5f, P-1503
Rachmeler, M., A-254b, P-917
Racker, E., A-88d, P-2663; P-2697
Rader, L. E., Jr., A-104e, P-1359
Radford, E. P., Jr., A-422a, P-703
Radin, N. S., A-269e, P-2025
Radovich, J., A-24c, P-333; A-379d, P-334
Raftery, A., A-95b, P-574
Ragins, A. L., A-242b, P-14
Ragland, J. B., A-397a, P-20
Rahn, H., A-424c, P-2560; P-156
Raiken, L., A-326c, P-1081
Raitt, J. R., A-170b, P-1801
Rajagopalan, K. V., A-42a, P-1397
Rajender, S., A-9c, P-2773
Rall, D. P., A-141b, P-1645; A-392e, P-2198
Rall, T. W., P-2695
Ralph, R. K., A-351a, P-1390
Ralston, R., A-206f, P-2513
Ram, J. S., A-31f, P-1773
Ramalingam, A. V., A-426c, P-2537
Rama Rao, P. B., A-8a, P-1703; A-452d, P-2791
Ramazzotto, L., A-14e, P-376
Ramel, A., A-387a, P-937
Ramírez, J., A-49d, P-893
Ramos, A. O., A-379f, P-1315
Ramsey, D. S., A-153a, P-92
Randall, C. C., A-444f, P-2351
Randall, H. G., A-260c, P-2792
Randall, W. C., A-212f, P-1879; A-213a, P-1333
Randle, P. J., A-85f, P-2600
Rankin, J., A-424f, P-160
Ranney, H. M., A-70b, P-2618
Rao, N. A., A-45e, P-2009
Rapaport, D. N., A-311d, P-1582
Rapaport, F. T., A-36a, P-532
Rapatz, G., A-51f, P-1381
Rapela, C. E., A-100d, P-1905; A-110c, P-1904
Rappaport, I., A-437f, P-512
Rapport, M. M., A-278f, P-2152
Rasmussen, A. I., A-448d, P-1096
Rasmussen, R. A., A-94c, P-2247; A-94d, P-2246
Ratcliffe, H. L., A-91f, P-1649; A-176b, P-1648
Ratner, A., A-184d, P-480
Ratner, E., A-36d, P-537
Rattenborg, C. C., A-429a, P-2530
Ratzenhofer, M., A-97b, P-622
Rauch, A., A-68a, P-1382
Ravin, H. A., P-1196
Rawson, A. J., A-23d, P-2277
Rawson, R. O., A-212f, P-1879
Ray, A. K., A-206e, P-2512
Ray, F. E., A-435b, P-644
Ray, O. S., A-393e, P-631
Ray, P. D., A-283a, P-2680
Raymond, S., A-378b, P-2257
Rayner, R. R., A-101b, P-1290
Razin, E., A-252c, P-202
Read, R. C., A-107a, P-1350
Readler, B., A-30d, P-2367
Reber, E. F., A-55a, P-606; A-55b, P-607
Rebuck, J. W., A-61e, P-1661
Recant, L., A-288d, P-2264
Rech, R. H., A-426c, P-2537
Recknagel, R. O., A-289f, P-468
Redding, J. S., A-129a, P-1994
Redetzki, H., A-12f, P-2270; A-448b, P-419
Redgate, E. S., A-185f, P-1220; A-195f, P-1256
Redick, T. F., A-122c, P-967
Reed, D. J., A-330a, P-2397
Reed, L. J., A-238b, P-800
Rees, H. B., Jr., A-29f, P-514
Reese, W. G., A-348c, P-632
Reeve, E. B., A-74a, P-190
Reeves, T. J., A-125d, P-212
Regen, D. M., A-83d, P-2097
Rehm, W., A-193a, P-41
Reibstein, R., A-226e, P-2070
Reich, E., A-154f, P-1866
Reich, P., A-224c, P-1433
Reichard, G. A., A-81d, P-294
Reichlin, S., A-186e, P-235
Reid, B. L., A-363f, P-2788
Reilly, E. B., A-410e, P-1630
Reilly, H. W., A-18e, P-530
Reilly, J., A-122e, P-1570
Reilly, P., A-178a, P-1848
Reilly, W. A., A-203f, P-1179
Reimer, S. M., A-56e, P-1228
Reinhold, H., A-431a, P-1302
Reinhold, J., G., A-1d, P-312
Reish, J. J., Jr., A-271e, P-946
Reiss, O. K., A-135b, P-2687
Reissig, M., A-440a, P-2353
Reizenstein, P. G., A-68b, P-2449
Remensnyder, J. P., A-103f, P-218; A-132b, P-690
Remmert, L. F., A-50f, P-886; P-2323
Remy, C. N., A-281a, P-1504
Rendina, G., A-83b, P-2076
Renn, R. A., A-99f, P-225
Renold, A. E., A-190e, P-40; A-368a, P-2453
Renson, J. F., A-238a, P-107
Renzi, A. A., A-178a, P-1848
Reporter, M. C., A-298a, P-2147
Resnick, O., A-392c, P-2470
Retan, J. W., A-33d, P-431
Retzlaff, E., A-325f, P-707
Reuben, J. P., A-339d, P-719
Revel, H. R., A-256a, P-2607
Revici, E., A-264f, P-2229
Revzin, A. M., A-319a, P-2173
Reynolds, L. B., A-427a, P-1301
Reynolds, M. S., A-2c, P-1707; A-8e, P-1710; A-448d, P-1096
Rezabek, H., A-241f, P-2334; A-371b, P-2330
Rho, J., A-147f, P-795
Rhoades, J. L., A-232e, P-925
Rhoads, J. E., A-419d, P-640
Rhode, E. A., A-110e, P-692
Rhodes, C., A-292a, P-1121
Rice, J. O., A-6f, P-1197
Richard, M. N., A-60d, P-1232
Richards, A. B., A-111e, P-1578
Richards, R. K., A-165f, P-590
Richardson, J. A., A-314f, P-2216
Richardson, K. E., A-374e, P-2664
Richardson, T., A-146b, P-2638
Richardson, T. Q., A-120f, P-1892
Richter, A., A-444d, P-874
Rickli, E., A-241b, P-867
Riddle, J. M., A-61e, P-1661
Rider, J. A., A-434d, P-1023
Ridlon, S. A., A-324b, P-1804; A-395e, P-24
Rieben, P. A., A-123f, P-1347; A-124a, P-1348
Rieck, A. F., A-201b, P-1188
Riegl, M., A-229a, P-2304
Riehl, E., A-41e, P-2075
Riehm, J. P., A-220f, P-928
Rifé, U., A-60c, P-2428
Rifkind, R. A., A-15a, P-519; A-440e, P-1166
Rigas, D. A., A-69d, P-2620
Rigby, P. E., A-63f, P-1069
Riggi, S. J., A-265f, P-1921; A-266f, P-2459
Riggs, J. L., A-16c, P-518; A-441f, P-1729
Riggs, T. R., A-140c, P-1455
Riker, W. K., A-317f, P-1618
Riley, E., A-154c, P-1696
Riley, G. A., A-182b, P-2409
Riley, R. L., A-431c, P-1967
Ring, G. C., A-105b, P-755
Ringler, I., A-276c, P-2721
Ringler, R. L., A-47a, P-2011
Ritchie, A. C., A-253b, P-2740
Ritchie, J. M., A-167d, P-974
Rittenberg, M. B., A-23f, P-2743
Rittenbury, M. S., A-242f, P-1671
Ritter, C., A-197e, P-2480
Ritter, H. W., A-159a, P-2756
Rivera, A., A-10f, P-2126
Rizvi, S., A-438b, P-832
Robbins, B., A-261b, P-2758
Robbins, G. B., A-408d, P-2290
Robbins, K. C., A-272d, P-2027
Robbins, P. W., A-86c, P-2612
Robert, A., A-182a, P-1654
Robert, L., A-235d, P-1502
Roberts, A. N., A-21f, P-2384
Roberts, E., A-239c, P-281
Roberts, J., A-122e, P-1570
Roberts, K. D., A-180e, P-344
Robertson, J. S., A-68b, P-2449
Robillard, E., A-428f, P-2574
Robin, E. D., A-431e, P-1970
Robins, E., A-342c, P-2683
Robinson, B. W., A-327e, P-2583
Robinson, D. A., A-231e, P-2109
Robinson, J. N., A-78f, P-2307
Robinson, M. A., A-25c, P-2347
Robinson, R. L., A-182f, P-2213
Robinson, W. G., A-4a, P-868
Roboz-Einstein, E., A-343e, P-2143
Roca-Garcia, M., A-437b, P-1164
Rodalewicz, I., A-54b, P-2718
Rodbard, S., A-108a, P-1958
Roddie, I. C., A-118b, P-407
Roderuck, C., A-452e, P-2790
Rodil, D., A-422f, P-689
Rodman, N. F., Jr., A-62a, P-1680
Rodriguez, J., A-442d, P-1728
Rodriguez, J. M., A-333a, P-1372
Rodriquez, M. I., A-124e, P-209
Roe, J. H., A-78f, P-2307; A-81a, P-2094
Roeder, L. M., A-371c, P-2337
Roels, O. A., A-90d, P-616; A-365b, P-615; A-368f, P-1086; A-373b, P-1087
Roffler, S. K., A-259e, P-2794
Rogers, A. E., A-287b, P-463
Rogers, T. A., A-293e, P-1937
Roheim, P. S., A-285e, P-2675
Rolfe, D. T., A-449d, P-2319
Romano, A., A-319c, P-1620
Rondell, P., A-112e, P-1342
Ronkin, R. R., A-134f, P-2445
Ronquillo, L., A-410b, P-1629
Roorbach, E. H., A-429b, P-2575
Roos, A., A-430b, P-1971
Root, M. A., A-168c, P-2704

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Root, W. S., A-422f, P-689
Roots, B. I., A-209a, P-743
Roque, M., A-73b, P-2032; A-76c, P-2419; A-290f, P-2416
Rose, H. M., A-15a, P-519; A-440e, P-1166
Rose, I. A., A-226b, P-295
Rose, J. C., A-75b, P-185; A-98b, P-1893
Rose, N. R., A-39a, P-1154; A-151a, P-96
Rosell-Perez, M., A-193f, P-297
Roseman, S., A-161f, P-1497
Rosen, E., A-61c, P-2436
Rosen, F., A-181d, P-1853; A-225d, P-326
Rosen, L., A-182c, P-1607
Rosenberg, B. H., A-350e, P-2091
Rosenberg, F. J., A-314d, P-2468
Rosenberg, J. C., A-154a, P-1694
Rosenberg, P., A-306b, P-1211
Rosenberg, S. A., A-154a, P-1694
Rosenfeld, L., A-10b, P-1511
Rosenfeld, M., A-196a, P-1227
Rosenfeld, R. S., A-283f, P-1544
Rosenheim, S., A-227c, P-1051
Rosenkrantz, H., A-175c, P-1547
Rosenthal, F., A-402e, P-2198
Rosenthal, H. L., A-202c, P-1523
Rosenthal, O., A-180f, P-1554
Rosenthal, S. R., A-32b, P-2751
Rosenweig, M. R., A-343d, P-2652
Rosner, S., A-157e, P-373
Rosoff, B., A-73b, P-2032; A-291a, P-2417; A-291b, P-1031; A-295d, P-1610; A-403c, P-1032
Rosomoff, H. L., A-75a, P-187
Ross, C., A-410c, P-1627
Ross, J., Jr., A-127a, P-146
Ross, J. C., A-425d, P-699
Ross, J. F., A-64a, P-1060
Ross, M. R., A-36f, P-2346
Ross, R., A-164c, P-444
Ross, R. S., A-431c, P-1967
Roth, D. M., A-299d, P-74
Roth, K. L., A-37c, P-1072
Roth, L. J., A-329f, P-592
Rothballer, A. B., A-333f, P-229
Rothchild, L., A-186f, P-638
Rothe, C. F., A-116c, P-785
Rothfus, J. A., A-383d, P-2141
Rothman, A., A-141b, P-1645
Rothschild, C., A-78e, P-2144
Rothschild, J. A., A-145c, P-2686
Rotter, N., A-38a, P-1783
Rouser, G., A-268a, P-810
Roussos, G., A-358b, P-1391
Rowan, K. S., A-374f, P-2079
Rowe, G. G., A-101d, P-1289; A-102e, P-359
Rowe, R. P., A-396d, P-110
Rowland, D. K., A-411c, P-1634
Rowley, D. A., A-24a, P-2274; A-63e, P-1066
Royer, M., A-140e, P-1456
Rubin, A. D., A-119b, P-1957; A-261a, P-411
Rubin, E., A-289b, P-1052
Rubin, H., A-149d, P-1876
Rubin, M., A-68c, P-1376
Rubenberg, F. H., A-329c, P-1982
Rudolph, A. M., A-133d, P-1360
Rudolph, S. G., A-376a, P-1422
Rudzinska, M. A., A-136d, P-2446
Ruegamer, W. R., A-206b, P-1207
Ruis, N. G., A-54a, P-1230
Ruiz, R. R., A-302b, P-2541
Rush, J. P., A-294f, P-200
Rushizky, G. W., A-358a, P-1384
Rushmer, R. F., A-97f, P-223; A-103e, P-215; A-111f, P-448; A-114f, P-217; A-119a, P-1961; A-130e, P-2527; P-1252; P-1257
Rushin, A., A-102b, P-360; A-448b, P-419
Russell, F. E., A-319d, P-2396
Russell, H., A-260d, P-2658
Russell, I. S., A-332c, P-776
Russell, J. A., P-593
Russell, P. J., A-50e, P-1396
Russell, R. A., A-101f, P-1293
Russell, R. L., A-123c, P-1002
Russfield, A. B., A-187f, P-1691; A-288b, P-1054
Russo, H. F., A-414f, P-2188
Rutenburg, A. M., A-152d, P-652
Rutherford, B. E., A-245e, P-2327
Rutledge, L. T., A-337a, P-1920
Rutledge, R., A-393a, P-1170; A-409f, P-1631
Rutman, J., A-54d, P-1667
Rutman, R. J., A-354d, P-2085
Rutowski, J. M., A-243f, P-2733
Rutschmann, J., A-329e, P-1974
Rutter, W. J., A-286e, P-301

S

Sabelli, H., A-393d, P-101
Sabine, John R., A-372b, P-488
Sachs, E., A-339f, P-1979
Sachs, H., A-195c, P-1222; A-195f, P-1226
Sacktor, B., A-46c, P-2643
Sacra, P., A-115f, P-394
Sadove, M. S., A-308d, P-1014
Safar, P., A-129a, P-1994
Sager, R., A-166b, P-2208
Saha, A., A-22c, P-2383
Saha, N. N., A-199e, P-1812
Said, S. I., A-422b, P-2563
Saidel, L. J., A-382d, P-322
Saini, N., A-118c, P-1666
Sakan, T., A-3b, P-2130
Salce, L., A-387b, P-2064
Salisbury, P. F., A-123f, P-1347; A-124a, P-1348
Sallach, H. J., A-82e, P-804
Salmoiraghi, G. C., A-331f, P-2588
Salmon, R. J., A-281d, P-353
Salmon, W. D., A-90c, P-573; A-290d, P-1713
Salomon, H. R., A-297e, P-1938
Salomon, L. L., A-451e, P-896
Saltefors, S., A-113f, P-395
Saltman, P., A-375a, P-2661
Salzano, J., A-213c, P-674
Samachson, J., A-76c, P-2419; A-290f, P-2416; A-291c, P-2749
Sampson, C., A-93a, P-2456
Sampson, S. R., A-169e, P-2166
Samson, F. E., Jr., A-340c, P-1310; A-341d, P-1313
Samson, G. D., A-451d, P-495
Samuels, A. J., A-70d, P-2252; A-70e, P-2253
Samuels, L. T., A-180d, P-2476
Sanadi, D. R., A-146c, P-2688
Sanborn, R. C., A-418a, P-1948
Sanchez, V., A-303d, P-249
Sandberg, H., A-58f, P-1861; A-59a, P-1860
Sandberg, R. L., A-369b, P-481
Sander, C., A-352b, P-2092
Sanders, B. E., A-60d, P-1232
Sanderson, R. P., A-150e, P-98
Sandine, W. E., A-9f, P-1419
Sandler, A., A-326b, P-379
Sandow, A., A-301a, P-2547
Sandson, J., A-163f, P-2303
Sandstrom, W., A-440f, P-1870
Sanger, R., A-66f, P-2363
Sankar, B., A-394c, P-2467
Sankar, D. B., A-344f, P-2466
Sankar, D. V. S., A-344f, P-2466; A-394c, P-2467
Sano, S., A-376c, P-2614
Sanslone, W. R., A-350f, P-1706
Santambrogio, G., A-333d, P-777
Santos, B. G., A-60b, P-2427
Santos, H., A-277b, P-2249
Saphir, O., A-94b, P-450
Sapirstein, L. A., A-75c, P-186
Saponara, A., A-356b, P-1474
Sarcione, E. J., A-256b, P-821
Sardesai, V. M., A-65e, P-497
Sarkar, N. K., A-147e, P-2093
Sarkar, S., A-238f, P-2161
Sarnoff, S. J., A-103f, P-218; A-126d, P-148; A-129c, P-145
Sartorelli, A. C., A-156a, P-961
Sasakawa, T., A-272b, P-270
Sastry, B. V. R., A-295b, P-1626
Sato, G., A-15b, P-1872
Sato, M., A-346c, P-1366; A-348f, P-169
Satzman, R., A-215d, P-2557
Sauberlich, H. E., A-85d, P-2306; A-370d, P-1701
Saunders, H. L., A-175e, P-2481
Savard, K., A-187e, P-1435
Savchuck, W. B., A-155d, P-1249
Saville, P. D., A-292c, P-2418
Sawyer, C. H., A-187b, P-2474
Sawyer, W. H., A-195a, P-1224
Saxena, H. C., A-364c, P-2317
Saxton, C., A-97a, P-621
Sayers, G., A-183d, P-633
Sayre, F. W., A-369c, P-2205
Sbarra, A. J., A-161b, P-454; A-162c, P-455
Schabel, F. M., Jr., A-155c, P-1074
Schachman, H. K., A-387a, P-937
Schachter, D., A-137c, P-738
Schaefer, K. E., A-210c, P-2517; A-215f, P-2514
Schaefer, T., A-343a, P-21
Schaffner, F., A-288e, P-2; A-288f, P-461; A-289d, P-1049
Schally, A. V., A-185d, P-636
Schanberg, S. M., A-141f, P-1641
Schanker, L. S., A-62e, P-1606; A-141d, P-1643; A-141e, P-1644; A-144a, P-1642
Schapiro, H., A-248f, P-122
Schartum, S., A-76b, P-2424
Schayer, R. W., A-256f, P-224
Schedl, H. P., A-243c, P-192; A-244c, P-337
Scheer, B. T., A-177b, P-184
Schenk, E. A., A-134b, P-2250
Schepartz, B., A-2e, P-1314
Scher, A. M., A-108d, P763
Scheraga, H. A., A-380a, P-317
Scherbaum, O. H., A-144c, P-2444
Scherer, W. F., A-444a, P-1132
Schiffman, G., A-67a, P-2366
Schiffrin, M. J., A-308d, P-1014
Schiller, S., A-163b, P-1408
Schimke, R. T., A-226a, P-1416
Schirch, L., A-200a, P-1428
Schlegel, J. U., A-404a, P-769
Schmid, H. E., Jr., A-109c, P-761
Schmid, K., A-383b, P-2138
Schmid, W., A-268d, P-339
Schmidt, C., A-72d, P-1695
Schmidt, G., A-236a, P-865; A-269f, P-2150
Schmidt, J. E., A-188c, P-595
Schmidt, J. L., A-316d, P-1613
Schmidt-Nielsen, B., P-1786
Schmidt-Nielsen, K., A-208d, P-183
Schneider, H., A-15f, P-2806
Schneider, H. A., A-263b, P-1780; A-266b, P-443
Schneider, J. A., A-308c, P-587; A-420c, P-1969
Schneider, K. C., A-350c, P-2035
Schneider, M., A-77b, P-447
Schoefl, G. I., A-119e, P-441
Schoenberg, H. W., A-405b, P-2289
Schoeniger, D., A-38f, P-1782
Schoepfle, G. M., A-338d, P-242
Scholander, P. F., A-103c, P-2524
Scholes, V. E., A-153c, P-369
Schönbaum, E., A-188e, P-597
Schooley, J. C., A-71a, P-1926
Schoolman, A., A-431a, P-1302
Schools, P. E., Jr., A-366a, P-1107
Schottelius, B. A., A-302b, P-2541
Schottelius, D. D., A-302b, P-2541
Schraeder, J., A-58f, P-1861; A-59a, P-1860
Schrecker, A. W., A-168d, P-423; A-168e, P-422
Schreiber, M., A-266a, P-2251
Schreiner, B., A-399b, P-2746
Schrek, R., A-72b, P-1063
Schroepfer, G. J., Jr., A-285d, P-2676
Schubert, J. R., P-2323
Schuck, C., A-372f, P-1093
Schuder, J. C., A-106b, P-1353
Schueler, F. W., A-307e, P-2169; A-318a, P-2176; P-563
Schulman, M. P., A-82b, P-2019
Schultz, J., A-384b, P-1437
Schultz, S. G., A-138e, P-740
Schultze, M. O., A-3c, P-1512
Schuls, A. R., A-88c, P-2667
Schumann, H., A-193a, P-41
Schussler, G. C., A-204c, P-2485
Schutz, B., A-46b, P-306
Schwartz, H., A-180b, P-1343
Schwartz, H. G., A-201d, P-2489
Schwartz, H. S., A-173d, P-985
Schwartz, I. L., A-195e, P-313; A-406d, P-735
Schwartz, M. A., A-167e, P-390; A-171a, P-1177
Schwartz, N. B., A-335c, P-2581; A-335d, P-2582
Schwartz, R., A-287d, P-1714
Schwartz, S., A-281d, P-353
Schwartz, K., A-295a, P-2031; P-2320
Schweet, R., A-389f, P-1476
Schwendenmann, F. C., A-116c, P-785
Scott, A., A-46b, P-306
Scott, C. W., A-90a, P-400
Scott, D. B. McN., A-199a, P-1429
Scott, H. M., A-296a, P-502
Scott, K. G., A-203f, P-1179
Scott, M. L., A-370e, P-2332; P-2321
Scott, R. F., A-91c, P-1664; A-91d, P-614; A-91e, P-618; A-93f, P-1665
Scotti, L., A-309c, P-1012
Scow, R. O., A-189f, P-80
Scratch, G. S., A-331e, P-716
Scriabine, A., A-394a, P-1811; A-411a, P-1632; A-411d, P-1633
Scrimshaw, N. S., A-372a, P-1084
Scruggs, W., A-341a, P-2299
Seabrooks, F., A-153f, P-1698
Seager, L. D., A-348c, P-632
Seagraves, P. A., A-267f, P-1719
Seal, U. S., A-179e, P-2139
Sealby, R. L., A-431d, P-1968
Seamer, J., A-443a, P-1734
Searle, G. L., A-203f, P-1179
Sears, D. F., A-142f, P-2448
Seegers, W. H., A-55e, P-1233
Segal, H. A., A-58a, P-2431
Seguin, J. J., A-211b, P-2252
Sehon, A. H., A-13e, P-2812; A-15f, P-2806
Seibles, T. S., A-384c, P-2061
Seidel, J. C., A-96e, P-1198
Seifter, J., A-395d, P-103
Seifter, S., A-386d, P-2068
Seiji, M., A-6a, P-1548
Seitchik, J., A-207f, P-1088
Sekine, T., A-299c, P-77
Sekul, A. A., A-318b, P-2175
Sekuzu, I., A-51d, P-801
Sela, M., A-217f, P-939
Selkurt, E. E., A-116c, P-785
Seller, R. H., A-410d, P-1623
Sellers, A. F., A-242a, P-1900
Sellers, E. A., A-188e, P-597
Sellers, M. I., A-441a, P-1162
Sellinger, O. Z., A-343c, P-2626
Selye, H., A-194a, P-2492
Semple, R. E., A-119d, P-1955
Sen, A. K., A-138b, P-1932
Senay, L. C., Jr., A-110a, P-1880
Senior, J. R., A-245c, P-18
Seno, S., A-3b, P-2130
Seraydarian, K., A-302a, P-73
Serrano, B., A-309c, P-1012
Serrone, D. M., A-171d, P-1036; A-171e, P-1035
Session, J., A-34c, P-426; A-34d, P-424
Setty, C. S. N., A-245a, P-198
Severinghaus, J. W., P-753
Shaefer, H., A-48e, P-307
Shah, S., A-270b, P-472
Shaka, J. A., A-287b, P-463
Shalhoub, R. J., A-415c, P-131
Shamoian, C. A., A-272e, P-81
Shanaman, J., A-328d, P-1173
Shanfeld, J., A-127f, P-1000
Shank, R. E., A-287d, P-1714
Shannon, A., A-368d, P-473
Shapiro, B. A., A-121e, P-972
Shapiro, F., A-32d, P-539
Shapiro, H., A-300a, P-2549
Share, L., A-195b, P-1223
Sharp, E., A-446b, P-2356
Sharp, G. C., A-30e, P-2393; A-39d, P-542
Sharp, J. T., A-405a, P-2288
Shashaty, G., A-68c, P-1376
Shatkin, A. J., A-154f, P-1866
Shaw, E., A-454a, P-1515
Shay, H., A-247a, P-1258; A-250a, P-121
Shea, P. J., A-294a, P-392
Shear, M. J., A-262b, P-2371
Sheatz, G. C., A-326a, P-1975
Shechmeister, I. L., A-437c, P-1140
Shelokov, A., A-436f, P-1137
Shepard, C. C., A-16e, P-551; A-16f, P-550
Shepherd, J. T., A-130d
Sheppard, H., A-181b, P-2404; A-409e, P-1625
Sherber, D. H., A-268e, P-2727
Sherman, J. K., A-134e, P-2452
Sherman, R., A-235b, P-1526
Sherrod, T. R., A-111d, P-1577
Sherry, S., A-58b, P-1859
Sherwood, J., A-11b, P-2775
Shetlar, M. R., A-175f, P-637
Shibuya, I., A-79d, P-1403
Shida, H., A-207c, P-2410
Shideman, F. E., A-128a, P-1571
Shields, G. S., A-118e, P-451; A-160c, P-1413
Shields, R. R., A-157c, P-2209
Shim, R. Y., A-92f, P-2460; A-93a, P-2456

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Shimamoto, K., A-121e, P-972
Shimizu, F., A-161f, P-1497
Shimosato, S., A-128b, P-1004; A-312e, P-981
Shimura, Y., A-10e, P-1417
Shipp, J. S., A-302c, P-2544
Shirley, R. L., A-219d, P-2311
Shirley, W., A-162c, P-455
Shirven, R. M., A-233e, P-929; A-351d, P-840
Shiue, J. C., A-130a, P-214
Shivak, R. J., A-104d, P-1575
Shmukler, H., A-384b, P-1437
Shoemaker, W. C., A-314a, P-1903
Shonk, C. E., A-240b, P-922
Shopiro, T. D., A-311f, P-2471
Shore, M. L., A-401f, P-137
Shore, P. A., A-257f, P-2236; A-258a, P-2232
Shortridge, L., A-8e, P-1710
Shrift, A., P-2324
Shue, G. M., A-369a, P-1113
Shuey, E. W., A-216e, P-904
Shull, R. L., A-366d, P-2789
Shulman, S., A-60c, P-2428
Shultice, R. W., A-170d, P-416
Shumway, N. P., A-180b, P-1343
Shuster, L., A-375d, P-955
Sidel, V. W., A-137f, P-730
Siders, D. B., A-297b, P-726
Siebecker, K. L., A-313b, P-982
Siedler, A. J., A-358f, P-850
Siegel, B. V., A-445a, P-2762
Siegel, I. A., A-141c, P-1639
Siegel, J. H., A-126e, P-1621
Siegel, L., A-239d, P-803
Siegel, M. M., A-149e, P-89; A-443b, P-1735
Sigg, E. B., A-311f, P-2471
Signer, E. R., A-255d, P-883
Silbiger, M., A-186f, P-638
Silva, A., A-198d, P-1821
Silver, L., A-195e, P-313
Silver, M. J., A-54b, P-2718; A-277f, P-2501
Silverman, F. R., A-206b, P-1207
Silverman, M., A-454b, P-1518
Silverstein, H., A-326b, P-379
Siminoff, R., A-348e, P-2589
Simmons, B., A-65b, P-1517
Simmons, D. H., A-106d, P-1356; A-411f, P-128; A-412b, P-127
Simmons, J. R., A-436d, P-876
Simmons, V. P., A-159b, P-2714
Simonsen, D. G., A-239c, P-281
Simpson, W. F., A-150f, P-95
Sims, G., A-23c, P-2716
Sinclair, R., A-151f, P-1245
Sinex, F. M., A-378a, P-2148
Singer, E. J., A-248a, P-1057; A-289c, P-1056
Singer, L., A-76e, P-2420
Singer, T. P., A-47a, P-2011
Singh, J., A-168b, P-2706
Singh, U. N., A-444c, P-910
Singletary, H., A-103b, P-2243
Singleton, J. W., A-247f, P-1282
Sinsheimer, R. L., A-438c, P-881
Sipple, J. S., A-430f, P-1964
Siskind, G. W., A-25a, P-2344; A-27a, P-2340
Sister F. C. Ladd, A-354f, P-1389
Sister J. M. Smith, A-357c, P-351
Siu, P. M. L., A-235e, P-272
Sizer, I. W., A-255d, P-883
Sjodin, R. A., A-297a, P-1936
Sjoerdsma, A., A-318e, P-2703
Skarnes, R. C., A-19d, P-529
Skeggs, H. R., A-449e, P-496
Skeggs, L. T., P-265
Skelton, F. R., A-180c, P-1340; A-181f, P-1646
Skerjance, J., A-80f, P-303
Skinner, D. M., A-240c, P-869
Skoza, L., A-59c, P-1858
Slanetz, C. A., A-95f, P-1626
Slater, C., A-156d, P-349
Slater, G. G., A-180a, P-1099
Slaughter, C., A-230c, P-285
Slechta, L., A-357e, P-842
Sloan, A. W., A-111a, P-1987
Sloneker, J. H., A-86e, P-2656
Slotta, K. H., A-60b, P-2427
Sloviter, H. A., A-143d, P-2692
Slusher, M. A., A-329b, P-713
Small, W., A-162b, P-1409
Smart, K. M., A-441e, P-1726
Smillie, L. B., A-382a, P-1445
Smillie, R. M., A-88e, P-895
Smith, A. G., A-155b, P-1075
Smith, A. L., A-45c, P-1483
Smith, R. J., A-447b, P-2781
Smith, R. L., A-58d, P-1862; A-321f, P-1803
Smith, R. W., A-333e, P-227
Smith, Richard E., A-196a, P-1227
Smith, Roberts A., A-79f, P-2651
Smith, S. W., A-290a, P-466
Smith, T., A-279f, P-943
Smith, T. C., A-424f, P-160
Smith, T. E., A-238a, P-107
Smith, W. B., A-301c, P-1636
Smith, W. G., A-4f, P-1420
Smith, W. K., A-205e, P-2584
Smith, W. M., A-421b, P-157
Smith, W. O., A-294b, P-1683
Smutko, C., A-364a, P-2326
Smyth, G. A., A-134a, P-2244
Snell, E. E., A-228c, P-283; P-256
Snell, K. C., A-435b, P-644
Snell, M. Mc., A-173a, P-1609
Snider, R. S., A-348d, P-775
Snyder, F., A-275f, P-949
Snyder, J., A-185c, P-234
Snyder, Joseph, A-130f, P-151; A-132d, P-152
Sobel, A. E., A-77a, P-2422
Sobel, H. J., A-136f, P-658
Socolar, S. J., A-346c, P-1366
Soffer, L., A-396b, P-100
Sohler, A., A-173f, P-989
Sokal, J., A-99d, P-1280
Sokatch, J., A-264b, P-1041
Solomon, A. K., A-138e, P-740
Solomon, D. K., A-225d, P-326
Solymar, E., A-253b, P-2740
Sommers, H. M., A-134a, P-2244
Sommers, S. C., A-243a, P-645; A-408d, P-2290
Sonders, R. C., A-283b, P-2681
Soni, J., A-106a, P-754
Sonnenblick, E. H., A-126c, P-211; A-129c, P-145
Sonnenschein, R. R., A-104b, P-220; A-104c, P-221
Sorter, M., A-14f, P-377; A-352a, P-378
Sosnowski, G., A-409d, P-1628
Soule, H. D., A-153a, P-92
Southam, C. M., A-443c, P-2766; A-443f, P-1133
Southworth, J., A-95a, P-572
Soyka, L. F., A-307a, P-1808
Spaet, T. H., A-53a, P-2433
Spar, I. L., A-58c, P-1856
Spargo, B., A-408e, P-2266
Sparks, J. R., A-361d, P-1436
Spaziani, E., A-198e, P-1820
Speck, J. C., Jr., A-220f, P-928
Spector, B., A-67c, P-1928
Spector, S., A-319a, P-2173; A-322c, P-108
Speirs, R. S., A-23a, P-2343
Spencer, H., A-76c, P-2419; A-290f, P-2416; A-291a, P-2417; A-291b, P-1031; A-291c, P-2749; A-295d, P-1610; A-403c, P-1032
Spencer, J. H., A-353b, P-1388
Spencer, J. M., A-231c, P-1432
Spencer, M. P., A-109c, P-761; A-109d, P-767
Sperelakis, N., A-126f, P-203
Spicer, S. S., A-16a, P-408; A-201e, P-2484
Spiegel, E. A., A-330d, P-714
Smith, B. G., A-404a, P-769
Smith, C. C., A-158d, P-2199
Smith, C. H., A-81f, P-1673
Smith, C. M., A-165a, P-402
Smith, C. W., A-426d, P-521
Smith, D. C., A-210e, P-2555
Smith, D. E., A-17c, P-2339
Smith, D. J., A-161d, P-1414
Smith, E., A-46b, P-306
Smith, E. L., A-72e, P-786
Smith, Emil L., A-383c, P-2140
Smith, E. R. B., A-182d, P-1832
Smith, E. V. C., A-60d, P-1232
Smith, F., A-39d, P-542
Smith, G. S., A-114c, P-1205
Smith, J. L., A-48b, P-1552
Smith, J. M., A-32d, P-539
Smith, J. W., Jr., A-215b, P-677
Smith, K., A-73d, P-2259
Smith, L., A-44d, P-1401
Smith, L. E., A-219d, P-2311
Smith, L. W., A-164d, P-445
Smith, O. A., A-119a, P-1961
Smith, P. E., Jr., A-212a, P-1882
Smith, P. N., A-12d, P-2269
Smith, R. A., A-351a, P-1390
Smith, R. E., A-208f, P-744
Spiegel-Adolf, M., A-342b, P-348
Spiegelman, S., A-362a, P-914
Spiro, D., A-77c, P-8; A-407f, P-2261
Spiro, R. G., A-383e, P-2142
Spitaletta, P., A-308e, P-1010
Spittel, J. A., Jr., A-56c, P-46
Spitzer, J. J., A-275d, P-2507; A-276a, P-950
Spizizen, J., A-254c, P-877
Spolter, L., A-162f, P-1404
Spolter, P. D., A-3f, P-332
Spradley, J. F., A-324f, P-1308
Springer, G. F., A-30c, P-2368; A-30d, P-2367
Sprinz, H., P-1195
Spuler, H., A-330d, P-714
Spurrier, W., A-32b, P-2751
Squibb, R. L., A-350f, P-1706
Squires, R. D., A-215a, P-1329
Srebnik, H. H., A-198d, P-1821
Sreebny, L. M., A-253e, P-1668
Srinivasan, P. R., A-10f, P-2126
Staab, E. V., A-32c, P-2373
Stackhouse, S., A-173f, P-989
Stackhouse, S. P., A-309c, P-1012
Stagg, R. M., A-198b, P-1814
Stahl, W. L., A-146d, P-884
Stainsby, W. N., A-103d, P-222
Stallings, J. O., A-120f, P-1892
Stamler, F. W., A-408f, P-2282
Stamler, J., A-97a, P-621
Stand, F., A-295d, P-1610
Standaert, F. G., A-304d, P-403
Stansly, P. G., A-153a, P-92
Stanworth, D. R., A-31d, P-1147
Staple, E., A-282e, P-2678; A-283d, P-1830; A-284a, P-2679
Stare, F. J., A-92b, P-619
Stark, G. R., A-377c, P-319
Stark, L., A-347c, P-1910
Stark, P., A-328b, P-627
Starr, T. J., A-444e, P-2763
Stasilli, N. R., A-202a, P-1183
Staub, N., A-107f, P-1962; A-426b, P-701
Stavraky, G. W., A-325a, P-712
Stebbins, R. B., A-435c, P-1600
Steblay, R. W., A-37f, P-2267; A-408e, P-2266
Steele, R., A-188d, P-599; A-192f, P-34; A-193e, P-33
Steele, W. J., A-354d, P-2085
Stefanini, M., A-59b, P-2432; A-60f, P-1863
Stefanovic, V., A-238d, P-1462
Stefanye, D., A-44a, P-1394
Steffek, A., A-201b, P-1188
Steigman, A. J., A-265a, P-1760
Steigmann, F., A-411e, P-2189
Stein, A. A., A-23c, P-2716; A-407e, P-1680
Stein, L., A-395d, P-103
Stein, M., A-178a, P-1848; A-421d, P-2566
Stein, O., A-271b, P-947
Stein, R. J., A-287c, P-459
Stein, W. H., A-377b, P-320; A-377c, P-319
Stein, Y., A-271b, P-947
Steinberg, A., A-200c, P-342
Steinberg, B., A-69b, P-1062
Steiner, R. F., A-385e, P-931
Steiner, S. H., A-427b, P-2533
Steinman, H. G., A-232b, P-871
Stekol, J. A., A-6d, P-1715; A-360c, P-918
Stellwagen, E., A-387a, P-937
Stelos, P., A-18a, P-2814
Stelzner, H. D., A-370a, P-2312
Stephens, N., A-275f, P-949
Stephenson, N. R., A-179a, P-2413
Sterling, K., A-204e, P-1178; A-205f, P-1180
Sterman, M. B., A-334c, P-1919
Stern, J. R., A-272c, P-268
Stern, K., A-66e, P-2365
Stern, M., A-392a, P-413
Sternberg, S. S., A-241e, P-1599
Sternberger, L. A., A-20a, P-2810
Stetson, C. A., Jr., A-39f, P-2279
Stevens, A., A-363b, P-2001
Stevens, C. E., A-242a, P-1900
Stevens, E., A-291a, P-2417; A-403c, P-1032
Stevens, R. W., A-18e, P-530
Stevenson, E., A-282e, P-2678
Stevenson, J. A. F., A-211b, P-2552
Stewart, H. L., A-435b, P-644
Stewart, J. M., A-285f, P-386
Stewart, P. B., A-420f, P-2572
Stiefel, M., A-97a, P-621
Still, W. J. S., A-94a, P-2245
Stimmel, B. F., A-200b, P-341
Stinnett, B., A-366f, P-470
Stites, T. B., A-410e, P-1630
Stobie, G. H. C., A-204b, P-2043; A-252d, P-19
Stockert, E., A-265b, P-1731
Stokinger, H. E., A-203a, P-2223; A-420d, P-2222
Stoll, A. M., A-401a, P-1885
Stollar, D., A-13f, P-2389; A-353c, P-834
Stone, D., A-391e, P-1480
Stone, H., A-428f, P-2574
Stone, N., A-237b, P-2292
Stone, N. H., A-249e, P-1653; A-249f, P-120
Stone, S. H., A-260a, P-2795
Stone, W. H., A-74f, P-825
Stopps, G. J., A-212a, P-1882
Storck, R., A-362a, P-914
Storey, W., A-426b, P-701
Stormont, C., A-66c, P-2364
Stracher, A., A-299b, P-935
Strain, R. D., A-158f, P-2757
Strand, P. J., A-404c, P-1679
Strano, A. J., A-12f, P-2270
Straube, R. L., A-286c, P-1285
Straughn, M. C., A-134f, P-2445
Straumanis, L., A-342b, P-348
Strauss, A. J. L., A-38c, P-1159
Strauss, J., A-417a, P-2181
Strecker, H. J., A-5e, P-2040
Strehler, B. L., A-298a, P-2147
Streicher, E., A-392e, P-2398
Strength, D. R., A-41c, P-1562
Strike, T. A., A-400b, P-2195
Strittmatter, P., A-47c, P-2013
Strobel, G. E., A-118f, P-440
Strohman, R. C., A-299a, P-1798
Strömblad, B. C. R., A-306e, P-1614
Strominger, J. L., A-85b, P-906; A-228e, P-380; P-255
Strumwasser, F., A-338e, P-706
Stuart, D. G., A-334f, P-1332
Stulberg, C. S., A-150f, P-95
Stumpf, P. K., A-273e, P-273
Sturkie, P. D., A-130c, P-696
Sudak, F. N., A-214e, P-684
Sudduth, H. C., A-271e, P-946; A-278a, P-945
Suelter, C. H., A-49c, P-888
Suld, H. M., A-284a, P-2679
Sullivan, J. M., A-75b, P-185
Sullivan, K., A-291b, P-1031
Sullivan, L. P., A-412d, P-132
Sullivan, M. X., A-236c, P-1540
Sullivan, W. J., A-414b, P-667
Sulser, F., A-321e, P-102
Sulya, L. L., A-267b, P-180
Sunahara, F. A., A-211a, P-2556
Sunahara, P. I., A-424f, P-160
Sunderman, F. W., A-217a, P-1541
Sunderman, F. W., Jr., A-217a, P-1541
Sung, S. C., A-353d, P-1393
Surawicz, B., A-129d, P-213; A-130a, P-214
Surgenor, D. M., A-53e, P-1239
Susat, R., A-293f, P-1939
Suskind, S. R., A-439d, P-548
Süssdorf, D. H., A-24d, P-2342
Sutherland, E. P., P-2695
Sutherland, E. W., A-189a, P-2103
Sutherland, G. B., A-11d, P-2811
Sutherland, G. F., A-348a, P-1264
Sutin, J., A-335e, P-2469
Sutterer, W. F., A-131a, P-2525
Suzuki, R., A-245b, P-197
Swaffield, M. N., A-286d, P-1286
Swain, H. H., A-121e, P-972
Swanson, R. E., A-415f, P-1271
Swarm, R. L., A-39d, P-542
Swartwout, J. R., A-277c, P-1822
Swartz, M., A-354a, P-1387
Swartzbaugh, S., A-35b, P-430; A-36c, P-429
Sweat, M. L., A-283e, P-1461
Sweeley, C. C., A-5a, P-1564
Sweeney, M. J., Jr., A-41c, P-1562
Sweeney, P., A-191e, P-858a
Swell, L., A-366a, P-1107
Swendseid, M. E., A-8b, P-1705
Swenson, E., A-102c, P-1297
Swenson, R. A., A-181b, P-2404
Swick, R. W., A-80b, P-269
Swift, H., A-136e, P-3
Sybers, R. G., A-125c, P-1294
Symmes, D., A-322b, P-2395

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Syverton, J. T., A-151b, P-97; A-152c, P-1246; P-556
Szanto, P. B., A-93c, P-2461
Szara, S., A-172c, P-1833; P-65
Szaran, J., A-6d, P-1715
Szekely, E. G., A-330d, P-714
Szentivanyi, A., A-24c, P-333; A-379d, P-334
Szepsenwol, J., A-77e, P-302
Szutka, A., A-207f, P-1088
Szybalski, W., A-360e, P-878

T

Tabachnick, I. I. A., A-396e, P-105
Tabachnick, J., A-219c, P-2294
Tabachnick, M., A-204e, P-1178; A-205f, P-1180
Taber, H. W., A-42e, P-1484
Tabor, C. W., A-143f, P-2203
Tabor, H., A-351b, P-879
Taft, E. B., A-405a, P-2288
Takagaki, G., A-342e, P-2627
Takasaki, K., A-111b, P-356
Takeda, Y., A-74a, P-190
Takemori, A. E., A-311c, P-1580
Takemoto, K. K., A-443e, P-1139
Talcott, M. L., A-372f, P-1093
Talmage, D. W., A-24c, P-333; A-379d, P-334
Talmage, R. V., A-194b, P-2425
Talwalker, P. K., A-418c, P-1952
Tanaka, R., A-145f, P-2645; A-197d, P-1425
Tanami, Y., A-444e, P-2763
Tanenbaum, S. W., A-22f, P-1768
Tang, J., A-239a, P-1438
Tang, K. L., A-239a, P-1438
Taniguchi, S., A-45b, P-2665
Taniuchi, H., A-3b, P-2130
Tanner, G. A., A-413e, P-666
Tass, R. D., A-123b, P-970
Tappan, D. V., A-423d, P-2597
Tappel, A. L., A-146b, P-2638; A-303c, P-2310
Tashiro, M., A-3b, P-2130
Taskier, E. F., A-264f, P-2229
Tatum, E. L., A-154f, P-1866
Taylor, J. L., Jr., A-332d, P-1917
Tauber, H., A-260d, P-2658
Taubler, J., A-18c, P-553
Taussky, H. H., A-295c, P-1029
Taylor, A. B., A-19f, P-525
Taylor, A. N., A-292b, P-1448
Taylor, C. B., A-95a, P-572; A-248b, P-1058
Taylor, D. D., A-267e, P-471; A-284c, P-2455
Taylor, E. L., A-240f, P-924
Taylor, E. W., A-148c, P-93
Taylor, J. D., A-219a, P-383
Taylor, J. F., A-355b, P-957
Taylor, J. M., A-432c, P-988
Taylor, K. W., A-190e, P-40
Taylor, R. E., Jr., A-214a, P-683
Taylor, R. W., A-20d, P-2804
Taxelaar, A. P., Jr., A-373d, P-1175
Tchen, T. T., A-223a, P-1549
Tedesco, T. A., A-447b, P-2781
Tejada, C., A-371f, P-1083
Telford, J., A-308f, P-1585
Tellschi, M., A-94b, P-450
Tellem, M., A-66b, P-1073
Tennent, D. M., A-268c, P-2462
Tenny, K. S., A-284e, P-1117
Teodoru, C. V., A-11c, P-1774; A-165c, P-446; A-262e, P-2275
Tephly, T. R., A-65c, P-1033
Tepperman, H. M., A-83f, P-2595
Tepperman, J., A-83f, P-2595
Terasaki, P. I., A-37d, P-2451
Terres, G., A-259c, P-2793
Terry, H., A-299f, P-2540
Thannhauser, S. J., A-269f, P-2150
Thayer, S. A., A-283a, P-2680
Theis, G., A-265c, P-1134
Theophilus, F., A-371d, P-2325
Theorell, H., P-259
Therriault, D. G., A-278d, P-823
Thies, R., P-565
Thilenius, O. G., A-104f, P-757
Thomas, C. A., A-439d, P-548
Thomas, C. R., A-40b, P-1061
Thomas, E. R., A-86a, P-1992
Thomas, J. A., A-401e, P-133
Thomas, J. E., A-246d, P-1262
Thomas, L., A-36a, P-532
Thomas, W. A., A-91c, P-1664; A-91e, P-618
Thompson, E. M., A-282b, P-1206
Thompson, G. B., A-373e, P-487
Thompson, J. H., Jr., A-56c, P-46
Thompson, R. H., A-207a, P-2511
Thompson, W. L., A-357e, P-2239
Thomson, J. D., A-401e, P-133
Thomson, R. A. E., A-399b, P-2746
Thorbecke, G. J., A-25a, P-2344; A-27a, P-2340
Thorne, C. B., A-254e, P-880
Thorne, H. V., A-437e, P-1141
Thorne, J. L., A-106c, P-1355
Thornton, P. A., A-210a, P-1105
Thorp, F. K., A-163c, P-1407
Thorp, W. T. S., P-1792
Threnn, R. H., A-228e, P-380
Thung, N., A-428c, P-2577
Thygeson, P., A-436e, P-515
Tidball, M. E., A-257f, P-2236
Timiras, P. S., A-198d, P-1821; A-402e, P-2198
Ting, E. Y., A-426f, P-2536
Tinoco, J., A-368c, P-474
Tinsley, I. J., A-452c, P-2785
Titchener, E. B., A-41b, P-1559
Titus, E., A-279b, P-1450
Toalson, L. D., A-70f, P-2254
Tobian, L., A-112c, P-1345
Tocantins, L. M., A-54b, P-2718; A-57b, P-49; A-277f, P-2501
Tocus, E. C., A-192a, P-85
Toczek, S., A-331b, P-1909
Todd, F. E., A-350e, P-2335
Toennies, G., A-453e, P-1514
Tokuyama, T., A-3b, P-2130
Tolbert, B. M., A-398e, P-314; A-398f, P-2655
Tolbert, N. E., A-374e, P-2664
Tolman, R. A., A-124c, P-147
Toman, J., A-393d, P-101
Tomashefski, J. F., A-423c, P-2564
Tomboulian, A., A-112c, P-1345
Tomizawa, H. H., A-190f, P-859
Tomkins, G. M., A-218c, P-805; A-238e, P-799
Tomlinson, R., A-278a, P-811
Tong, H., A-169f, P-991
Tooley, W., A-428c, P-2577
Toporek, M., A-450c, P-1055
Topper, Y. J., A-196d, P-1434
Torciana, M. L., A-125a, P-205
Tornheim, J., A-236d, P-1500
Torres, G., A-421c, P-2562
Torres, J. C., A-125a, P-205; A-125b, P-208
Tosaka, T., A-325c, P-1368
Tosteson, D. C., A-138a, P-1933
Toussaint, A. J., A-15c, P-531
Touster, O., A-84f, P-897
Towne, J. C., A-343a, P-21
Townsend, E., A-438f, P-835
Tracht, D. G., A-289a, P-465
Tracht, M. E., A-289a, P-465
Trager, W., A-136d, P-2446
Trams, E. G., A-174c, P-1603
Tranquada, R. E., A-12e, P-1077
Trapani, I. L., A-23b, P-1742; A-31e, P-1149
Trapani, R-J., A-262b, P-2371
Trautner, T., A-354a, P-1387
Trayser, K. A., A-233b, P-290
Treadwell, C. R., A-366a, P-1107; A-367c, P-2454
Tredwell, C., A-97a, P-621
Tremer, H. M., A-165b, P-1040
Trendelenburg, U., A-317e, P-2174
Trentin, J. J., A-34c, P-426; A-34d, P-424
Triantafillides, T., A-411e, P-2189
Triantaphyllopoulos, D. C., A-53b, P-1234
Tricou, B. J., A-400c, P-2191
Trier, J. S., A-136a, P-375
Tritsch, G. L., A-205b, P-1181
Troll, W., A-41f, P-1563; A-42f, P-1481
Troncale, F. J., A-450f, P-493
Trotman, N. M., A-214c, P-661
Trout, M. E., A-368f, P-1086
Trowbridge, H. O., A-378e, P-329
Trucco, R. E., A-453b, P-2165
Truchly, V., A-35b, P-430
Truitt, E. B., Jr., A-310a, P-1015; A-320d, P-1209
Trulson, M. F., A-92b, P-619
Truszczynski, M., A-29a, P-1769
Tsaltas, T. T., A-94e, P-2434
Tschirgi, R. D., A-332d, P-1917
Tsitouris, G., A-58f, P-1861; A-59a, P-1860
Ts'o, P., A-352b, P-2092
Tsou, V., A-203c, P-2313
Tsugita, A., A-254d, P-882
Tsuiki, S., A-87c, P-1495
Tsuji, F. I., A-11e, P-2809
Tsung, C. M., A-4f, P-1420
Tsutsui, E. A., A-224c, P-1433
Tucker, D., A-221e, P-923
Tuller, M. A., A-106f, P-1357
Tully, J. G., A-22b, P-1756
Tumbusch, W. T., A-21b, P-1759
Tuna, N., A-268b, P-2154
Tureman, J. R., A-122f, P-966
Turgeon, C., A-408d, P-2290
Turk, D. E., A-295f, P-503
Turnbull, L. B., A-172d, P-992
Turner, D. L., A-54b, P-2718; A-2
Turner, J. K., A-120d, P-1983
Turner, R. A., A-12f, P-2270
Tusing, T. W., A-432e, P-1598
Tustanoff, E. R., A-272c, P-268
Tuttle, A. H., A-67f, P-1380
Tuttle, S. G., A-8b, P-1705
Tuve, T., A-295a, P-2031
Tyce, G. M., A-252d, P-19
Tye, A., A-170b, P-1801
Tyler, J., A-427c, P-2538

U

Uchida, T., A-86c, P-2612
Uchizono, K., A-325e, P-1371; A-345d, P-1373
Udenfriend, S., A-238a, P-107; A-344a, P-1836; A-344b, P-30
Ulin, A. W., A-54c, P-2717; A-54d, P-1667
Ullrey, D., A-145b, P-1451
Ulmer, D. D., A-222a, P-2309
Ulrich, F., A-145d, P-741
Umaña, R., A-147d, P-2682
Umberger, E. J., A-199b, P-2479
Ungar, F., A-43d, P-797
Ungar, G., A-193b, P-38
Unna, K. R., A-307a, P-1808
Upham, H. C., A-402d, P-2197
Upjohn, E., A-97a, P-621
Urry, D. W., A-180d, P-2476
Urso, P., A-25b, P-2345; A-25e, P-2349
Urton, F. S., A-297f, P-1449
Usdin, E., A-392f, P-27
Usdin, V., A-392f, P-27
Ushiyama, J., A-125f, P-206
Usman, A., A-100c, P-1908

V

Vaes, G., A-76f, P-2421
Vagelos, P. R., A-273c, P-278
Vahouny, G. V., A-367c, P-2454
Valdivia, E., A-209f, P-1657
Vallee, B. L., A-220c, P-291; A-222a, P-2309
Vanatta, J. C., A-293f, P-1939
Van Bibber, M. J., A-439a, P-2610
Vance, V. K., A-403d, P-1272
Van Citters, R. L., A-97f, P-223; A-111f, P-448; A-130e, P-2527
van Dam, R. T., A-126a, P-204
Vanderhooft, G. F., A-320c, P-2394
VandeWiele, R. L., A-180e, P-344
Van Dyke, R. A., A-398f, P-2655
Van Huss, W. D., A-207d, P-1204
Van Itallie, T. B., A-248d, P-651
Van Kley, H., A-235a, P-866
Van Liew, H. D., A-423f, P-1306
Van Loon, E. J., A-93d, P-856
Van Maanen, E. F., A-419e, P-641
Van Orden, L. S., A-335e, P-2469
Van Pilsum, J. F., A-225e, P-327
Van Poznak, A., A-312c, P-977; A-312d, P-976
Van Reen, R., A-365d, P-1123
Van Vunakis, H., A-438f, P-835
Varandani, P. T., A-452f, P-2783
Varco, R. L., A-34e, P-428
Varma, D. R., A-89f, P-973; A-316a, P-1576
Varner, J. E., A-10c, P-2631
Varon, H. H., A-181e, P-2450
Vars, H. M., A-117a, P-783
Varvis, C. J., A-133a, P-758
Vasington, F. D., A-146a, P-662
Vassale, M., A-130b, P-210
Vatter, A., A-287c, P-459
Vaughan, J. A., A-212d, P-1884
Vaughan, O. W., A-241f, P-2334; A-371b, P-2330
Vavich, M. G., A-363f, P-2788
Vawter, G. F., A-417c, P-1682
Vazquez, J. J., A-28b, P-1743
Veiga, L. A., A-84d, P-2649
Velasques, T., A-427f, P-2534
Veldkamp, W., A-373d, P-1175
Venditti, J. M., A-168d, P-423
Venkataraman, P. R., A-359e, P-1998
Vennesland, B., A-238b, P-2016
Venters, H., Jr., A-408c, P-2262
Verdesca, A. S., A-177e, P-2405
Verdier, P., A-96b, P-630
Verhave, T., A-395c, P-2464
Vernier, R. L., A-408a, P-1686
Vernier, V. G., A-323f, P-626
Vicente, J., A-357c, P-351
Vick, J. A., A-107a, P-1350
Vieira, E., A-454a, P-1515
Villareal, A., A-7c, P-1096
Villee, C. A., A-223e, P-1431; A-231c, P-1432
Visek, W. J., A-370b, P-2318
Vishwakarma, P., A-414c, P-2180
Visintine, R. E., A-270b, P-472
Visscher, M. B., P-1257
Viswanatha, T., A-232d, P-921
Vivian, V. M., A-293c, P-1120
Vogel, E. H., Jr., A-21b, P-1759
Vogel, H. J., A-10e, P-1417
Vogel, J. A., A-130c, P-696
Vogel, W. C., A-253c, P-1670
Vogt, P. K., A-149d, P-1876
Volini, F., A-287c, P-459
Volk, B. W., A-193c, P-1675; A-262e, P-2275
Volkin, E., A-356f, P-911; P-252
Volle, R. L., A-324c, P-2168
von Baumgarten, R., A-341c, P-1361
Von Endt, D., A-92f, P-2460
von Kaulla, K. N., A-58d, P-1862
Von Korff, R. W., A-223d, P-956
Vulpe, M., A-38a, P-1783

W

Wachstein, M., A-40a, P-2268; A-266b, P-443
Wachter, R. F., A-437a, P-513
Wacker, W. B., A-265a, P-1760
Wacker, W. E. C., A-356e, P-838
Wada, E., A-172d, P-992
Wada, H., A-228c, P-283
Wada, S., A-96c, P-1199
Wade, S. K., A-11a, P-2774
Waelsch, H., A-307f, P-28; A-342e, P-2627
Wagenknecht, A. C., A-278c, P-335
Wagle, G. L., A-109e, P-399
Wagle, S. R., A-392a, P-413
Wagman, I. H., A-330f, P-2473
Wagman, R. J., A-127d, P-1298
Wagner, B. M., A-111f, P-448
Wagner, B. P., A-435b, P-644
Wagner, C., A-270f, P-1505
Wagner, H. G., A-338c, P-1369
Wagner, R. H., A-57f, P-47
Wahba, A. J., A-361e, P-1521
Wainer, A., A-391d, P-328
Wainio, W. W., A-43c, P-1486
Waisman, H. A., A-6c, P-2039
Waitzman, M. B., A-138d, P-1309
Wakabayashi, M., A-276f, P-2725
Wake, R. G., A-354b, P-2090
Wakil, S. J., A-274d, P-276
Wakim, K. G., A-184e, P-634; A-217d, P-1537; A-403d, P-664
Waksman, B. H., A-258d, P-1775; A-263f, P-2376
Walaszek, E. J., A-111c, P-358; A-164f, P-2233; A-165a, P-402; A-314e, P-1616
Walcott, W. W., A-139f, P-188; A-140a, P-189
Waldo, A. L., A-129b, P-1985
Walker, B. L., A-13d, P-2269
Walker, James B., A-219f, P-284
Walker, Jane B., A-271d, P-1827
Walker, J. H., A-105c, P-1307
Walker, L. M., A-140c, P-1455
Walker, M. S., A-219f, P-284
Wall, A., A-28c, P-2338
Wallach, D. F. H., A-145b, P-1451
Wallenstein, S. L., A-311b, P-1009
Waller, G. R., A-431f, P-1443
Waller, H. J., A-333c, P-778
Walser, A., A-280a, P-809
Walser, M., A-412a, P-126
Walsh, E. J., A-151e, P-1247
Walsh, K. A., A-385c, P-1444
Walsh, R. R., A-397f, P-1449; A-346a, P-243
Walter, C. F., A-229d, P-2105

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Walter, D. O., A-335b, P-1978
Walter, H., A-387f, P-330
Walter, P. C., A-264c, P-1751
Walton, T., A-115d, P-686
Wang, C. H., A-84a, P-2648
Wang, G. H., A-332a, P-1915
Wang, H. L., A-6c, P-2039
Wang, S. C., A-195d, P-1221; A-330e, P-708; A-331d, P-2587
Wangensteen, O. H., A-248c, P-650; A-249e, P-1653; A-249f, P-120
Wangensteen, S. L., A-100a, P-1899; A-248c, P-650
Wannemacher, R. W., Jr., A-370c, P-1700
Waravdekar, V. S., A-262b, P-2371
Ward, J. W., A-251f, P-2739
Ward, L. E., A-405d, P-664
Ward, T., A-32b, P-2751; A-150a, P-1871
Ward, V., A-79e, P-1546
Ware, F., A-337e, P-718
Warner, H., P-2496
Warner, H. F., A-131f, P-2523
Warner, H. R., A-280b, P-808
Warner, L., A-169d, P-1016
Warnick, A. C., A-219d, P-2311; A-296e, P-510
Warren, L., A-80e, P-1498
Warren, M. R., A-328c, P-1172; A-328d, P-1173; A-328e, P-1174
Warren, R., A-394f, P-58
Warren, W., A-144f, P-791
Warwick, W. J., A-18b, P-2801
Washington, A., A-295c, P-1029
Wasserman, A. R., A-42d, P-1490
Wasserman, K., A-107d, P-1352
Wasserman, R. H., A-292b, P-1448
Watanabe, K., A-325c, P-1368
Watkins, M. L., A-276d, P-2728
Watson, F., A-70d, P-2252
Watson, L. S., A-60d, P-1232
Watson, M. L., A-161a, P-1046
Watson, W. C., A-244e, P-13
Wattenberg, L. W., A-242e, P-647; A-345a, P-2300; A-404c, P-1679
Watts, D. T., A-89c, P-1574; A-162f, P-2213
Watts, J. S., A-321e, P-102
Wax, J., A-257c, P-2240; A-309c, P-1012
Way, E. L., A-309d, P-1581; A-309e, P-1007
Way, J. L., A-169f, P-991; A-172b, P-990
Way, W. L., A-309e, P-1007
Waymouth, C., A-151f, P-1245
Weaver, C., A-373e, P-1092
Webb, G. D., A-346a, P-243
Webb, P., A-209b, P-1335
Webber, W. A., A-415c, P-131; A-415d, P-1274
Weber, A., A-300d, P-1795
Weber, C. L., A-71b, P-1925
Weber, E. J., A-186a, P-231
Weber, L. J., A-172a, P-26
Webster, G., A-387e, P-1475
Weed, R. L., A-62b, P-1379
Weeks, J. R., A-397d, P-1589
Weibel, E. R., A-425a, P-161
Wiegle, W. O., A-26f, P-2387
Weil, L., A-384c, P-2061
Weill, J. D., A-362e, P-2000
Weil-Malherbe, H., A-183d, P-1832; A-315b, P-1837
Weimer, H. E., A-73d, P-2259
Weinberg, A. N., A-218b, P-806
Weiner, I. M., A-247d, P-196
Weiner, M., A-291a, P-2417
Weiner, N., A-315f, P-1612; A-316e, P-2215; A-316f, P-2214
Weinhouse, S., A-81d, P-294
Weinstock, J., A-409d, P-1628
Weinstein, H., A-195c, P-1222; A-195f, P-1226
Weinstein, L., A-276d, P-2728
Weisberg, H., A-107b, P-1351
Weiss, A. K., A-349c, P-1288
Weiss, B., A-395a, P-57; A-395b, P-59
Weiss, G. B., A-143e, P-1637
Weiss, H. S., A-115a, P-1339
Weiss, J. B., A-450d, P-854
Weiss, M. H., A-345e, P-241
Weiss, S. B., P-253
Weissbach, H., A-217c, P-1569; A-238a, P-107
Weissman, N., A-160c, P-1413
Weissmann, B., A-236d, P-1500
Welch, H. H., A-174d, P-114
Weliky, I., A-179b, P-1464
Welker, W. I., A-332a, P-1915
Wellensiek, H. J., A-266d, P-2385
Wellings, F. M., A-443b, P-1735
Wellings, S. R., A-136c, P-9
Wellington, F. M., A-223e, P-1431
Wellington, J. S., A-34b, P-1071
Wells, C. L., A-70c, P-2255
Wells, D., A-121f, P-963
Wells, I. C., A-281a, P-1504
Wells, J. A., A-277c, P-1822
Wells, L. W., A-283a, P-2680
Wells, R. E., Jr., A-99a, P-1889
Welter, A. N., A-423a, P-2565
Wemyss, C. T., Jr., A-18f, P-523; A-73e, P-1753
Wenzel, B. M., A-332d, P-1917
Werbin, H., A-282f, P-1466
Werder, A. A., A-72d, P-1695; A-153c, P-369
Werkheiser, W. C., A-59e, P-2430
Werther, J. L., A-249b, P-1265; A-252b, P-10
Wessler, S., A-56e, P-1228; A-421d, P-2566
West, C. D., A-20e, P-2805
West, H. D., A-388f, P-1513
West, J. B., A-107e, P-1358
West, W. L., A-172e, P-1835
Westerbeke, E. J., A-319e, P-1807
Westfall, T. C., A-89c, P-1574
Westley, J., A-231a, P-287
Westphal, O., A-262c, P-2372
Westphal, U., A-283c, P-1465
Wharton, D. C., A-44e, P-1487
Whedon, G. D., A-207a, P-2511
Wheeler, A. G., A-434c, P-1592
Wheelock, R. H., A-122b, P-971; A-309c, P-1012
Wherry, C. G., A-213e, P-678
Wherry, F. E., A-183c, P-635
Whitby, G., A-167c, P-23
White, D. C., A-44d, P-1401
White, E., A-376f, P-2069
White, F. H., Jr., A-221b, P-938
White, R. J., A-322e, P-629
White, R. P., A-319e, P-1807
White, T. G., A-20f, P-555
Whitehead, R. W., A-400a, P-2194
Whitehouse, M. W., A-283d, P-1830
Whiteside, R. E., A-29b, P-546
Whitlock, D. G., A-349a, P-172
Whitney, G., A-341a, P-2299
Whitney, R., A-253f, P-1946
Wiberg, J. S., A-438e, P-2609
Wichern, W. A., Jr., A-105c, P-1307
Widdicombe, J. G., A-429c, P-1304; A-429d, P-1305
Widelitz, M. M., A-373c, P-1956
Wiebelhaus, V. D., A-409d, P-1628
Wiederhielm, C. A., A-103e, P-215
Wiegand, R. G., A-306c, P-1839
Wierich, W. R., A-133c, P-2526
Wiese, H. F., A-365c, P-1090; A-366e, P-1112
Wight, E. W., A-119d, P-1955
Wilchins, L. J., A-33c, P-434
Wilcox, S. S., A-8f, P-2779
Wilcox, W. C., A-445f, P-2354
Wilcox, W. D., A-340f, P-417
Wildman, S., A-146f, P-309
Wilgram, G. F., A-290a, P-466
Will, L., A-276c, P-2721
Willheim, R., A-14e, P-376; A-155a, P-2207; A-352a, P-378
Williams, C. A., Jr., A-18f, P-523; A-73e, P-1753
Williams, C. H., Jr., A-47d, P-2012
Williams, C. M., A-5a, P-1564
Williams, G., A-73b, P-2032; A-295d, P-1610
Williams, H. L., A-397e, P-2400
Williams, J. A., A-443b, P-1735
Williams, J. W., A-12a, P-2815
Williams, M. A., A-449a, P-1100
Williams, M. H., Jr., A-424e, P-158
Williams, M. W., A-247c, P-2731
Williams, W. L., A-419c, P-355
Williamson, J. R., A-191d, P-1672
Williamson, K. R., A-33b, P-533
Williamson, M. B., A-239f, P-1439
Williamson, P., A-30c, P-2368; A-30d, P-2367
Willis, J. E., A-82e, P-804
Willman, V. L., A-212c, P-1877
Wilson, D., A-372a, P-1084
Wilson, R. G., A-448e, P-1097
Wilson, R. H., A-422d, P-2567
Wilson, R. J., A-431e, P-1970
Wilson, T. H., A-243d, P-15
Wilson, W. B., A-440d, P-2765
Winder, C. V., A-122b, P-971; A-257c, P-2240; A-309c, P-1012
Windhager, E. E., A-413a, P-125
Windsor, E., A-57d, P-2719
Winebright, J. W., A-21a, P-2272
Winegrad, A. I., A-192e, P-39
Winemiller, R., A-408e, P-2266
Winicur, S., A-300d, P-1795
Winitz, M., A-7d, P-1704
Winkert, J., A-68a, P-1382
Winter, D. L., A-325b, P-2403
Winters, W. D., A-168a, P-984
Wintrobe, M. M., A-63a, P-2392; A-118e, P-451
Winzler, R. J., A-235d, P-1502
Wissler, R. W., A-94c, P-2247; A-94d, P-2246; A-136e, P-3
Witebsky, E., A-40f, P-1158
Withrow, C. D., A-340f, P-417
Witkin, L. B., A-308e, P-1010
Witkovsky, P., A-127b, P-176
Witonsky, P., A-204a, P-2041
Wittenberg, J. B., A-70a, P-2622
Wittenberger, C., A-44b, P-2635
Witting, L. A., A-269a, P-1108; A-367b, P-1825
Wixom, R. L., A-11a, P-2774
Wnuck, A. L., A-308a, P-583; A-313e, P-1622
Wojciech, R., A-250d, P-115
Wolbach, A. B., A-310c, P-1590
Wolbarsht, M. L., A-338c, P-1369
Wolcott, M. W., A-213e, P-678
Wold, F., A-240a, P-926
Wolf, B., A-25d, P-2348
Wolf, C. E., A-422f, P-689
Wolf, G., A-162e, P-1405; A-452f, P-2783
Wolfe, H. R., A-27e, P-1741
Wolff, E. C., A-217b, P-1525
Wolff, H. G., A-379f, P-1315
Wolfskill, S. J., A-85d, P-2306
Wolins, W., A-376e, P-2145
Wolken, J. J., A-70c, P-2255
Wollman, H., A-430d, P-1966
Wollman, S. H., A-201e, P-2484
Wolski, G., A-430a, P-2570
Wolterink, L. F., A-419a, P-1941
Wong, H. Y. C., A-92f, P-2460; A-93a, P-2456
Wong, K. C., A-314b, P-2170
Wong, K. K., A-340e, P-22
Wong, S. C., A-442f, P-1736
Wongsathuaythong, S., A-139f, P-188
Woo, C., A-151e, P-1247
Wood, B. J. B., A-230a, P-1553
Wood, E. H., A-130f, P-151; A-132d, P-152; P-1254, P-1257
Wood, H. G., A-226b, P-295; A-235e, P-272; A-235f, P-271; P-2437
Wood, S., A-277b, P-2249
Wood, W. A., A-85a, P-2650
Woodard, G., A-432e, P-1598
Woodbury, D. M., A-330a, P-2397; A-340f, P-417; A-344e, P-29
Woods, E. F., A-313a, P-980
Woods, J. W., A-186c, P-230
Woods, L. A., A-157a, P-371; A-310b, P-1588
Woods, T., A-7a, P-2782
Woodward, E. R., A-248f, P-122
Woolley, D. E., A-198d, P-1821
Woolley, D. W., A-285f, P-386; A-359f, P-844
Workman, R. D., A-212e, P-1881
Woronkow, S., A-415b, P-1273
Worthen, D. M., A-108c, P-766; A-409c, P-673
Worthen, H. G., A-218f, P-870; A-408b, P-1681
Wosilait, W. D., P-1724
Wotiz, H. H., A-199f, P-2156
Wright, B. E., A-223f, P-2604
Wright, E. B., A-345f, P-245
Wright, G. J., A-323a, P-31; A-452f, P-2783
Wright, L. D., A-49a, P-1468
Wu, C., A-218d, P-2625
Wu, R., A-226c, P-1243
Wurtz, R. H., A-336a, P-2586
Wurzel, M., A-316b, P-2218
Wyatt, G. R., A-81e, P-2081
Wycis, H. T., A-342b, P-348
Wyers, E. J., A-327a, P-1981
Wykes, A. A., A-219a, P-383
Wypych, J. I., A-266a, P-2251

Y

Yachnin, L., A-243b, P-12
Yaeger, R., A-370f, P-2777
Yaffe, S., A-409a, P-1688
Yagi, Y., A-14a, P-2808; A-18a, P-2814
Yamabayashi, H., A-107c, P-1959
Yamada, M., A-150c, P-94
Yamasaki, M., A-220e, P-1447
Yang, S. P., A-371a, P-2333
Yankeelov, J. A., Jr., A-220d, P-937
Yanofsky, C., A-255a, P-2603
Yarwood, E. A., A-369c, P-2205
Yates, F. E., A-184f, P-233
Yeary, R. A., A-435c, P-1600
Yeh, S. D. J., A-451c, P-498; A-451d, P-495
Yen, W., A-205d, P-1186
Yiacas, E., A-200f, P-2475
Yielding, K. L., A-238e, P-799
Yim, G. K. W., A-167b, P-2472; A-320b, P-628
Yip, C., A-202e, P-2042
Yohn, D. S., A-37a, P-1873
Yonetani, T., A-43a, P-1488
Yoshida, S., A-183d, P-633
Younathan, E. S., A-82a, P-2640
Young, A., A-384b, P-1437
Young, B. G., A-438b, P-832
Young, F. E., A-254c, P-877
Young, G. O., A-32a, P-2370
Young, P. G., A-124c, P-147
Young, Q. D., A-97a, P-621
Young, R. J., A-388e, P-792
Young, V. M., A-440c, P-1167
Yu, D. H., A-123e, P-998
Yu, M., A-411d, P-1633
Yu, S. Y., A-159d, P-2248
Yu, T., A-416a, P-665
Yuan, C., A-230f, P-289
Yugari, Y., A-10a, P-2632
Yunis, A. A., A-386a, P-2112
Yusem, M., A-250f, P-117
Yuwiler, A., A-392d, P-1218

Z

Zabin, I., A-255f, P-1454
Zajac, I., A-279d, P-819
Zalkin, H., A-303c, P-2310
Zalusky, R., A-453c, P-1104
Zamcheck, N., A-243b, P-12; A-290c, P-1050; P-1190
Zamenhof, S., A-255e, P-875
Zanger, L., A-133c, P-2526
Zannoni, V. G., A-5b, P-2044
Zapolski, E. J., A-68c, P-1376
Zaratzian, V. L., A-432b, P-1019
Zarkowsky, H., A-287d, P-1714
Zarnstorff, W. C., A-99e, P-1894
Zarrow, M. X., A-418a, P-1948
Zatzman, M. L., A-123c, P-1002
Zbinden, G., A-128e, P-365
Zebrowski, E., A-183a, P-2702
Zeigler, T. R., A-370e, P-2332
Zeleznick, L. D., A-41b, P-1559
Zelitch, I., A-375c, P-2017
Zeller, E. A., A-238f, P-2161
Zener, J., A-327f, P-2579
Ziboh, V. A., A-283b, P-2681
Ziegler, D. M., A-48f, P-889
Zieske, H. A., Jr., A-131d, P-691
Zieve, L., A-253c, P-1670
Zilliken, F., A-163e, P-1499
Zilversmit, D. B., A-92d, P-579; A-275a, P-2503
Zimmerman, S. B., A-360f, P-2611
Zipper, H., A-387f, P-330
Zitnik, R. S., A-130f, P-151; A-132d, P-152
Zsigmond, E. K., A-236f, P-2167; A-393f, P-25
Zucker, M., A-374a, P-310
Zucker, M. B., A-61b, P-52
Zucker-Franklin, D., A-53a, P-2433
Zukoski, C. F., A-34a, P-435
Zweifach, B. W., A-100b, P-438; A-1[illegible] P-2284; A-116f, P-782; A-119[illegible], P-1957; A-261a, P-411; A-301[illegible], P-727

"A" number is Abstract page number; letter following is position of abstract on page.
"P" number is paper serial number in the Program.

Directory of Special Meetings and Functions—1961

SATURDAY, APRIL 8

Meetings

Physiology Council—9:00 A.M. (*Traymore, Room 131*)
Nutrition Council—6:30 P.M. (*Ambassador, Room 106*)
Federation Advisory Committee—7:30 P.M. (*Ritz-Carlton, Dr. Lee's Suite*)
Journal of Biological Chemistry Ed. Board and Committee—9:00 A.M. (*Ambassador, Room 105*)

Dinners

Journal of Biological Chemistry Ed. Board, Committee, and Council—6:30 P.M. (*Ambassador, Room 122*)

SUNDAY, APRIL 9

Meetings

Physiology Council—9:00 A.M. and 7:30 P.M. (*Traymore, Room 131*)
Biochemistry Council—9:00 A.M. and 7:30 P.M. (*Ambassador, Room 108*)
Pharmacology Council—9:00 A.M. (*Dennis, Rooms 1 and 3*)
Pathology Council—9:30 A.M. and 7:30 P.M. (*Ritz-Carlton, Room 316*)
Nutrition Council—9:00 A.M. (*Ambassador, Room 106*)
Immunology Council—9:30 A.M. and 7:30 P.M. (*Shelburne, Parlor 118*)
Am. Board of Clinical Chemistry—4:00 P.M. (*Ambassador, Room 120*)
Am. Board of Nutrition—2:00 P.M. (*Ambassador, Room 103*)
Am. Society for Artificial Internal Organs—9:00 A.M. (*Ritz-Carlton, Ballroom*)
Am. Society of Biological Chemists, Committee on Educational Affairs—9:30 A.M. (*Ambassador, Room 107*)
Federation Board—1:30 P.M. (*Shelburne, Brady Room*)
Neurophysiology Group: Visual Mechanisms—3:00 P.M. (*Traymore, Rose Room*)
Poultry Nutrition Conference—1:30 P.M. and 7:30 P.M. (*Convention Hall, Room 21*)
Ruminant Nutrition—1:30 P.M. and 7:00 P.M. (*Ambassador, Surf Room*)
Society for Experimental Biology and Medicine, Membership Committee—1:00 P.M. (*Dennis, The Studio*)

Luncheons

International Union of Biochemistry, U. S. National Committee—12:30 P.M. (*Ambassador, Room 116*)
National Dairy Council Research Conference—12:15 P.M. (*Ambassador, Room 110*)

Dinners

Am. Board of Clinical Chemistry—6:30 P.M. (*Ambassador, Room 120*)
Am. Society for Artificial Internal Organs—7:00 P.M. (*Ritz-Carlton, Carlton Room*)
Society for Experimental Biology and Medicine, Board of Editors—5:00 P.M. (*Dennis, The Tent*)

MONDAY, APRIL 10

Meetings

Biochemistry Council—7:30 P.M. (*Ambassador, Room 108*)
Pharmacology Council—9:00 A.M. and 1:30 P.M. (*Dennis, Rooms 1 and 3*)
Am. Association of Scientific Workers, Business Meeting—5:00 P.M.; Discussion—8:15 P.M. (*Ambassador, Surf Room*)
Am. Board of Nutrition—9:00 A.M. (*Ambassador, Room 103*)
Am. Society for Artificial Internal Organs—9:00 A.M. (*Ritz-Carlton, Ballroom*)
Am. Society of Biological Chemists Committee on Educational Affairs—7:30 P.M. (*Ambassador, Room 107*)
Bone Marrow Discussion Group—8:00 P.M. (*Traymore, Rose Room*)
Journal of Pharmacology and Experimental Therapeutics Ed. Board—4:30 P.M. (*Dennis, Ozone Lounge*)
Parietal Cell Club—8:00 P.M. (*Traymore, Belvedere Room*)
Society for Experimental Biology and Medicine Section Secretaries—3:00 P.M. (*Dennis, The Studio*)
Special films sponsored by American Institute of Biological Sciences—3:00 P.M. (*Convention Hall, Room D*). See page 456 for program.

Luncheons

Journal of Nutrition Editorial Board—12:00 noon (*Ambassador, Room 107*)
Journal of Pharmacology and Experimental Therapeutics, Editor for Specific Fields—11:45 A.M. (*Dennis, The Tent*)

Cocktail Hour

Harvard Biochemists—5:00 P.M. (*Traymore, Skyline Terrace*)
Yale Biochemists—5:00 P.M. (*Shelburne, Brady Room*)

Dinners

Neuroendocrine Group—7:00 P.M. (*Chalfonte-Haddon Hall, Mandarin Room*)
Pharmacology Joint Editorial Boards—6:00 P.M. (*Dennis, Ozone Room*)
Society for Experimental Biology and Medicine Council—7:00 P.M. (*Dennis, The Tent*)
Univ. of Wisconsin Alumni—5:00 P.M. (*Madison, James Madison and Main Dining Rooms*)

Evening

V du V Gathering—10:00 P.M. (*Ambassador, Room 125*)

TUESDAY, APRIL 11

Meetings

Bureau of Biological Research Alumni Association—8:00 P.M. (*Dennis, The Studio*)

Breakfast

NIH Biochemistry Program Directors—7:30 A.M. (*Ambassador, Room 125*)

(cont. on back page)

SCHEDULE OF SCIENTIFIC SESSIONS—APRIL 10–14, 1961

LOCATION		MONDAY APRIL 10		TUESDAY APRIL 11		WEDNESDAY APRIL 12		THURSDAY APRIL 13		FRIDAY April 14	
		9:00 A.M.	1:30 P.M.	9:00 A.M.	1:30 P.M.	9:00 A.M.	1:30 P.M.	9:00 A.M.	1:30 P.M.	9:00 A.M.	1:00 P.M.
CONVENTION HALL	BALLROOM	BIOCHEMISTRY *Symp:* Topics of Current Interest	BIOCHEMISTRY Lipid Metabolism I	BIOCHEMISTRY Protein Metabolism II	BIOCHEMISTRY Genetics I	BIOCHEMISTRY Nucleic Acid Chemistry I	BIOCHEMISTRY Protein Metabolism III	BIOCHEMISTRY Nucleic Acid Synthesis	BIOCHEMISTRY Nucleic Acid Chemistry II	BIOCHEMISTRY Genetics II	INTERSOCIETY *Symp:* Lipid Metabolism
	ROOM H	BIOCHEMISTRY *Symp:* Action of Coenzymes	BIOCHEMISTRY Enzymes I: Mechanisms	BIOCHEMISTRY Oxidative Enzymes I	BIOCHEMISTRY Oxidative Phosphorylation I *Business Meeting*	BIOCHEMISTRY Electron Transport I	BIOCHEMISTRY Electron Transport II	BIOCHEMISTRY Oxidative Enzymes III	BIOCHEMISTRY Carbohydrate Metabolism VII *Business Meeting*	BIOCHEMISTRY Porphyrins & Hemeproteins	BIOCHEMISTRY *Symp:* Regulation of Metabolism
	STAGE	BIOCHEMISTRY *Symp:* Peptide Hormones	BIOCHEMISTRY Carbohydrate Metabolism I	BIOCHEMISTRY Phospholipid Metabolism	BIOCHEMISTRY Carbohydrate Metabolism III	BIOCHEMISTRY Carbohydrate Metabolism IV	BIOCHEMISTRY Carbohydrate Metabolism V	BIOCHEMISTRY Lipid Metabolism III	BIOCHEMISTRY Enzymes IV	BIOCHEMISTRY Amino Acid Metabolism V	
	ROOM F	INTERSOCIETY Cytology I	BIOCHEMISTRY Mitochondria & Chloroplasts	BIOCHEMISTRY Plasma Proteins	BIOCHEMISTRY Nucleic Acids II	BIOCHEMISTRY Amino Acid Metabolism I	BIOCHEMISTRY Amino Acid Metabolism II	BIOCHEMISTRY Nitrogen Fixation; Trace Elements	BIOCHEMISTRY Protein Metabolism IV	BIOCHEMISTRY Oxidative Enzymes V	INTERSOCIETY Cytology III
	ROOM G	INTERSOCIETY Gastroenterology I	BIOCHEMISTRY Protein Chemistry I	BIOCHEMISTRY Nucleic Acids I	BIOCHEMISTRY Enzymes III	BIOCHEMISTRY Hormones on Metabolism	BIOCHEMISTRY Coenzyme Metabolism I	BIOCHEMISTRY Amino Acid Metabolism III	BIOCHEMISTRY Amino Acid Metabolism IV	BIOCHEMISTRY Carbohydrate Metabolism VIII	
	ROOM B	PHYSIOLOGY Gastric Secretion	INTERSOCIETY Muscle I	INTERSOCIETY Atherosclerosis I	INTERSOCIETY Atherosclerosis II	PHYSIOLOGY G.I. Motility	INTERSOCIETY Atherosclerosis III	INTERSOCIETY Muscle II	INTERSOCIETY Atherosclerosis IV	PHYSIOLOGY Lipids; Fatty Acids	INTERSOCIETY Atherosclerosis V
	ROOM A	INTERSOCIETY Neuropharm. I	INTERSOCIETY *Symp:* Hallucinogenic Drugs in Man	INTERSOCIETY Neuropharm. IV	INTERSOCIETY Neuropharm. V	INTERSOCIETY Neuropharm. VI	INTERSOCIETY Neuropharm. VII	INTERSOCIETY Neuropharm. VIII	INTERSOCIETY Neuropharm. IX	INTERSOCIETY Neuropharm. X	INTERSOCIETY Neuropharm. XI
	ROOM 20	INTERSOCIETY Action of Insulin	INTERSOCIETY Insulin	INTERSOCIETY Anterior Pituitary I	INTERSOCIETY Anterior Pituitary II	INTERSOCIETY Thyroxine	PHYSIOLOGY Renal Concentrating Mechanism	INTERSOCIETY *Symp:* Use & Care of Animals	INTERSOCIETY Adrenal Cortex I	INTERSOCIETY Adrenal Cortex II	INTERSOCIETY Sex Hormones
	ROOM 21	PHYSIOLOGY Micropuncture; Acidification; Ammonia	PHYSIOLOGY Body Water	PHYSIOLOGY Weak Electrolyte Excretion	PHYSIOLOGY Active Transport I	PHYSIOLOGY Renal Tubule	INTERSOCIETY Pituitary	INTERSOCIETY Estrogens	PHYSIOLOGY Active Transport II	INTERSOCIETY Bone & Ca Metabolism	INTERSOCIETY Thyroid; Parathyroid
	ROOM 13	PHYSIOLOGY Radiation	PHYSIOLOGY G.I. Absorption	PHYSIOLOGY Hypothermia	PHYSIOLOGY Cold Adaptation; Hibernation	PHYSIOLOGY Liver; Aging	PHYSIOLOGY Temperature Regulation	PHYSIOLOGY Hyperthermia; Heat	PHYSIOLOGY Reproduction	PHYSIOLOGY Exercise; Energy Metab.; Environ.	PHYSIOLOGY Altitude; Space
AMBASSADOR HOTEL	RENAISSANCE ROOM		BIOCHEMISTRY Protein Metabolism I	BIOCHEMISTRY Pyrimidine Metabolism	BIOCHEMISTRY Protein Chemistry II	BIOCHEMISTRY Protein Chemistry III	NUTRITION *Symp:* Biological Role & Mechanism of Action, Vitamin K	BIOCHEMISTRY Coenzyme Metabolism II	BIOCHEMISTRY Glycoproteins	BIOCHEMISTRY Photosynthesis	
	"22" CLUB	NUTRITION Lipids & Steroids	NUTRITION Vitamin B_{12} *Business Meeting*	NUTRITION Clinical Nutrition Studies	NUTRITION Lipid Metabolism-Animal	NUTRITION Protein I: Amino Acid-Evaluation	BIOCHEMISTRY Proteases	NUTRITION Enzymes & Energy Metabolism *Business Meeting*	NUTRITION *Symp:* Nutritional Significance of Selenium	NUTRITION Protein III: Amino Acid Metabolism	
	ROTUNDA	NUTRITION Nutrition: General	NUTRITION Minerals I: Trace	NUTRITION Vitamins I: Water Soluble	NUTRITION Minerals II: Metabolism	NUTRITION Gastroenterology & Pathology	BIOCHEMISTRY Clinical Chemistry	NUTRITION Unidentified Growth Factors	NUTRITION Protein II: Metabolism	NUTRITION Vitamins II: A, E & K	
	VENETIAN ROOM		BIOCHEMISTRY Steroid Metabolism	BIOCHEMISTRY Carbohydrate	BIOCHEMISTRY Lipid Metabolism	BIOCHEMISTRY Active Transport	BIOCHEMISTRY Oxidative	BIOCHEMISTRY Protein Chemistry	BIOCHEMISTRY Lipid Chemistry	BIOCHEMISTRY Steroid Metabolism	
	PINE HALL	PATHOLOGY Transplantation	PATHOLOGY Cardiovascular I	INTERSOCIETY *Symp:* Viruses & Neoplasia	INTERSOCIETY Gastroenterology II	PATHOLOGY Stress	INTERSOCIETY *Symp:* Gastroenterology	PATHOLOGY Cardiovascular II	PATHOLOGY Immunopathology	PATHOLOGY Radiation	
	BALLROOM			PATHOLOGY			PATHOLOGY		PATHOLOGY		

AMBASSADOR HOTEL	VENETIAN ROOM		BIOCHEMISTRY Steroid Metabolism	BIOCHEMISTRY Carbohydrate Metabolism II	BIOCHEMISTRY Lipid Metabolism	BIOCHEMISTRY Active Transport & Pathology	BIOCHEMISTRY Oxidative	BIOCHEMISTRY Protein Chemistry	BIOCHEMISTRY Lipid Chemistry	BIOCHEMISTRY Steroid Metabolism	
RITZ-CARLTON HOTEL	SIDE HALL	PATHOLOGY Transplantation	PATHOLOGY Cardiovascular I	INTERSOCIETY *Symp:* Viruses & Neoplasia	INTERSOCIETY Gastroenterology II	PATHOLOGY Stress	INTERSOCIETY *Symp:* Gastroenterology	PATHOLOGY Cardiovascular II	PATHOLOGY Immunopathology	PATHOLOGY Radiation	
	BALLROOM			PATHOLOGY Tissue Response II	PATHOLOGY Hematology I *Business Meeting*	PATHOLOGY Thrombosis & Embolism	PATHOLOGY Kidney I	PATHOLOGY Hematology II; Parke, Davis Lect.	PATHOLOGY Kidney III	PATHOLOGY Endotoxins	
	CARLTON ROOM	PATHOLOGY Tissue Response I	PATHOLOGY Liver I	PATHOLOGY Liver II	PATHOLOGY Neoplasia I	PATHOLOGY Pancreas	PATHOLOGY Neoplasia II	PATHOLOGY Kidney II	PATHOLOGY Tissue Analysis & Metabolism	PATHOLOGY Virus	
SHELBURNE HOTEL	GRANDE BALLROOM	IMMUNOLOGY Viruses I: Rickettsiae	INTERSOCIETY Cell & Tissue Culture I	IMMUNOLOGY Viruses II	IMMUNOLOGY Tissue Antibodies *Business Meeting*	IMMUNOLOGY Interference: Latency	IMMUNOLOGY Antigens & Antibodies II	IMMUNOLOGY Antibody Formation II	IMMUNOLOGY Hypersensitivity II	IMMUNOLOGY Hypersensitivity III	
	KERRY HALL	IMMUNOLOGY Complement	IMMUNOLOGY Transplantation	IMMUNOLOGY Antigens & Antibodies I	IMMUNOLOGY Enteroviruses	IMMUNOLOGY Antibody Formation I	IMMUNOLOGY Hypersensitivity I	IMMUNOLOGY Viruses III	IMMUNOLOGY Antigens & Antibodies III	IMMUNOLOGY Antigen-Antibody Reactions	
	CORAL REEF ROOM	INTERSOCIETY Blood Clotting I	IMMUNOLOGY Microorganisms	INTERSOCIETY Blood Clotting II	INTERSOCIETY Cytology II	IMMUNOLOGY Infection & Resistance	INTERSOCIETY Blood Clotting III	IMMUNOLOGY Blood Groups	INTERSOCIETY Blood Clotting IV	INTERSOCIETY Blood Clotting V	
DENNIS HOTEL	BORTON HALL	PHARMACOLOGY Cardiovascular Pharmacology I	PHARMACOLOGY Cardiovascular Pharmacology II	PHARMACOLOGY Cardiovascular Pharmacology III	PHARMACOLOGY Cardiovascular Pharmacology IV *Business Meeting*	PHARMACOLOGY Cardiovascular Pharmacology V	PHARMACOLOGY Autonomic Pharmacology I	PHARMACOLOGY Autonomic Pharmacology II	PHARMACOLOGY Autonomic Pharmacology III *Business Meeting*	PHARMACOLOGY Autonomic Pharmacology IV	
	CRYSTAL BALLROOM	PHARMACOLOGY Cancer	PHARMACOLOGY Nerve—Muscle	PHARMACOLOGY Anesthetics	PHARMACOLOGY Analgesics I	PHARMACOLOGY Analgesics II	PHARMACOLOGY Renal Pharmacology I	PHARMACOLOGY Renal Pharmacology II	INTERSOCIETY Cell & Tissue Culture III	PHARMACOLOGY Blood: Metabolism & Transport	
	ST. DENIS ROOM	INTERSOCIETY Neuropharmacology II	INTERSOCIETY Neuropharmacology III	INTERSOCIETY *Symp:* The Hemicholiniums	PHARMACOLOGY Toxicology I	PHARMACOLOGY Toxicology II	INTERSOCIETY Cell & Tissue Culture II	PHARMACOLOGY Radiation	PHARMACOLOGY Toxicology III	PHARMACOLOGY Lipids & Lipid Metabolism	
	GARDEN LOUNGE	PHARMACOLOGY Cell. & Biochem. Pharmacology I	PHARMACOLOGY Cell. & Biochem. Pharmacology II	PHARMACOLOGY Drug Metabolism I	PHARMACOLOGY Drug Metabolism II	PHARMACOLOGY Drug Metabolism III	PHARMACOLOGY Drug Metabolism IV	PHARMACOLOGY Chemotherapy	PHARMACOLOGY Histamine-Antihistamine	PHARMACOLOGY Gastrointestinal Pharmacology	
TRAYMORE HOTEL	AMERICAN ROOM	PHYSIOLOGY Cardiac Dynamics	PHYSIOLOGY Cardiac Muscle: Conduction	PHYSIOLOGY Carotid Receptors; Cardiac Output	PHYSIOLOGY Pulmonary Circulation I *Business Meeting*	PHYSIOLOGY Coronary	PHYSIOLOGY Hypertension	PHYSIOLOGY Hemodynamics	PHYSIOLOGY Capillary Circulation *Business Meeting*	PHYSIOLOGY Cardiac Output	PHYSIOLOGY O_2-CO_2 Transport; Blood Gases
	TRAYMORE ROOM	PHYSIOLOGY Alveolar Gas Exchange	PHYSIOLOGY Peripheral Circulation I	PHYSIOLOGY Pulmonary Diffusion; Hemoglobin	PHYSIOLOGY Renal Blood Flow	PHYSIOLOGY Control of Respiration; Tissue Resp.	PHYSIOLOGY Pulmonary Circulation II	PHYSIOLOGY Peripheral Circulation II	PHYSIOLOGY Regulation of Respiration	PHYSIOLOGY Respiration Mechanics I	PHYSIOLOGY Respiration Mechanics II
	ROSE ROOM	PHYSIOLOGY Units; Reflexes	PHYSIOLOGY Hypothalamus	PHYSIOLOGY CNS Organization	PHYSIOLOGY Cortex Organization	PHYSIOLOGY *Sess. on Teaching:* Training for Clin. Investigators	PHYSIOLOGY Receptors	PHYSIOLOGY CNS & Behavior I	PHYSIOLOGY CNS & Behavior II	PHYSIOLOGY *Symp:* Computer Technics in Physiology	PHYSIOLOGY Behavior; Visceral Reflexes
	BELVEDERE ROOM	PHYSIOLOGY Comparative Physiology	PHYSIOLOGY Membrane & Endplate Potentials	PHYSIOLOGY Muscle Membrane: Smooth Muscle	PHYSIOLOGY Shock	PHYSIOLOGY Neurochemistry	PHYSIOLOGY Blood I	PHYSIOLOGY Blood II	PHYSIOLOGY Circulation; Heart	PHYSIOLOGY Muscle Metabolism; Contraction	PHYSIOLOGY Enzymes

MOTION PICTURES—Tuesday, Wednesday, and Thursday, 9:00 A.M.–5:00 P.M., Convention Hall, Room D
JOINT SESSION—Tuesday, 7:45 P.M., Convention Hall, Ballroom
PATHOLOGY SYMPOSIUM—Wednesday, 8:15 P.M., Ritz-Carlton, Ballroom

Cocktail Hour

Johns Hopkins Univ. Alumni Association—5:00 P.M. (*Traymore, Skyline Terrace*)
Univ. of Rochester—5:00 P.M. (*Ritz-Carlton, Ocean Terrace*)

Dinners

Am. Association of Clinical Chemists, Executive Committee—6:30 P.M. (*Ambassador, Room 105*)
Histamine Club—6:30 P.M. (*Marlborough-Blenheim, Rose Room*)
Liver Group—6:00 P.M. (*Marlborough-Blenheim, Chevy Chase Room*)
Physiology Joint Editorial Boards—6:30 P.M. Cocktails (*Shelburne, Mirror Room*); 7:30 P. M., Dinner (*Shelburne, Coral Reef Room*)
Research Discussion Group—6:30 P.M. (*Traymore, Pine Room*)
Univ. of California Biochemists (Northern Section)—6:30 P.M. (*Madison, Colonial Room*)
Univ. of Southern California Biochemists—6:00 P.M. (*Madison, East Dining Room*)
W. T. Salter Society—6:30 P.M. (*Marlborough-Blenheim, Red Room*)

Evening

St. Louis Univ. Biochemistry Get-together—9:00 P.M. (*Ambassador, Room 125*)

WEDNESDAY, APRIL 12

Meetings

Am. Association of Clinical Chemists Membership Meeting—4:30 P.M. (*Convention Hall, Room 21*)
Am. Physiological Society Education Committee Meeting—1:30 P.M. (*Traymore, Room 131*)
Am. Society for Experimental Pathology Symposium, Potential and Future of Experimental Pathology—8:15 P.M. (*Ritz-Carlton, Ballroom*)
Gastrointestinal Section of APS—8:00 P.M. (*Ambassador, Room 122*)
Reticuloendothelial Society—8:15 P.M. (*Chalfonte-Haddon Hall, Mandarin Room*)

Breakfast

State Univ. of Iowa (Iowa City)—7:45 A.M. (*Madison, North Dining Room*)

Luncheon

Pharmacology Past Presidents—12:30 P.M. (*Dennis, The Tent*)

Social Hour

Univ. of Illinois (Urbana)—5:00 P.M. (*Madison, Solarium*)

Dinners

Gastrointestinal Section of APS—6:00 P.M. (*Ambassador, Room 125,*
Metabolic Discussion Group—6:30 P.M. (*Chalfonte-Haddon Hall, Tower Room*)
National Association of Science Writers—6:00 P.M. (*Shelburne, Brady Room*)
Nutrition Society—6:30 P.M. (*Ambassador, Renaissance Room*)
Oregon State College Alumni—6:00 P.M. (*Madison, Colonial Room*)
Pathology Society—6:00 P.M. (*Ritz-Carlton, Carlton Room and Ballroom*)
Pharmacology Society—6:30 P.M. (*Dennis, Crystal Ballroom and Borton Hall*)
Respiration Group—6:30 P.M. (*Madison, Main Dining Room*)
Temperature Regulation—6:00 P.M. (*Marlborough-Blenheim, Chevy Chase Room*)

Evening

Biochemistry Society Social Mixers—9:00 P.M.–midnight
1. Viruses, genetic mechanisms and biochemical genetics (*Claridge, Trimble Hall*)
2. Nucleic acid, protein biosynthesis, etc. (*Haddon Hall, Rutland Room*)
3. Hydrogen transport, oxidative phosphorylation and carbohydrate metabolism (*Madison, Solarium*)
4. Metabolic control mechanisms and hormones (*Shelburne, Solarium*)
5. Protein chemistry (*Traymore, Rose Room*)

Immunology Smoker—9:00 P.M.–midnight (*Shelburne, Grande Ballroom*)

THURSDAY, APRIL 13

Meeting

Muscular Dystrophy Associations of America—4:30 P.M. (*Traymore, Skyline Terrace*)

Luncheon

Federation Secretaries Committee—12:30 P.M. (*Ritz-Carlton, Miss America Room*)

Dinners

Cardiac Muscle Club—7:00 P.M. (*Madison, North Dining Room*)
Coagulation Group—5:30 P.M. (*Madison, Colonial Room*)
Comparative Physiology—6:00 P.M. (*Madison, Solarium*)
David Bruce Dill Testimonial Dinner—7:00 P.M. (*Claridge, West Room*)

Evening

Thyroid Smoker—8:00 P.M. (*Traymore, Skyline Terrace*)

Women's Hospitality Lounge—9:00 A.M.–5:00 P.M., Monday through Friday (*Dennis, Founders Room*)

Coffee Lounges—8:30 A.M.–5:00 P.M., Monday through Friday
Intersociety—Convention Hall, Room E
Physiology—Traymore, Sun Deck
Biochemistry—Convention Hall, Room C
Pharmacology—Dennis, Playroom
Pathology—Ritz-Carlton, Game Room
Nutrition—Ambassador, Sun Porch
Immunology—Shelburne, Solarium

Identification

MEANS PROTECTION

Just as a fingerprint offers positive identification, the Mann Assayed (M.A.) label on your research biochemicals identifies, not only the product, but the quality of that product. The analysis on the label becomes your protection by giving a known starting point with biochemicals of proven quality. Why settle for less?

SEND FOR OUR FREE NEW 1960-1961 CATALOG CONTAINING:

Over 450 Amino Acids and Derivatives • About 200 Peptides
Over 250 Nucleoprotein, Purine and Pyrimidine Compounds
160 Hormones and Intermediates • 78 Enzyme Substrates
150 Carbohydrates • 230 Separate Alkaloids • Vitamins
Blood Fractions • Purified Proteins • Fatty Acids
Miscellaneous Biochemicals • Antibiotics • Antimetabolites

**RUSH ORDERS
PHONE COLLECT
BEekman 3-5865**

MANN RESEARCH LABORATORIES, INC.

136 LIBERTY STREET, NEW YORK 6, N.Y.

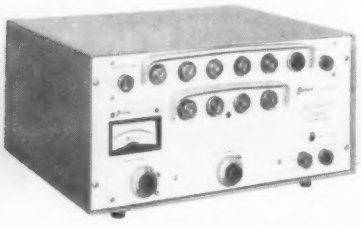
It's What's Inside That Counts!

If you are counting radioactive isotopes . . .

tritium, carbon-14, iodine-131,
iron-59 or any other alpha,
beta or gamma tracer isotope . . .

you should know about the latest transistorized instruments designed and manufactured by Packard.

Auto-Gamma System



Series 250A Automatic Scaler

Whether or not you are planning to purchase new equipment, you will be interested in our latest bulletins which show "what's inside" these instruments that makes them count so well . . . so reliably.

Write or telephone requesting new instrument bulletins.

TRI-CARB LIQUID SCINTILLATION SPECTROMETERS • AUTO-GAMMA SPECTROMETER SYSTEMS
FLOW DETECTORS • SCALERS • RATEMETERS

Packard ***Instrument Company, Inc.***

BOX 428-C • LA GRANGE, ILLINOIS • *Phone HUnter 5-6330*

CHICAGO • ALBUQUERQUE • ATLANTA • BOSTON • LOS ANGELES • NEW YORK • PHILADELPHIA
PITTSBURGH • SAN FRANCISCO • WASHINGTON, D. C. • ZURICH • PARIS

Visit us at Booth 97 — at the ACS Show